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14 September 1983

USSR Report

MILITARY AFFAIRS

No. 1794

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GROUND FORCES

MILITARY STUDENT'S ACCOUNT OF PRACTICAL TRAINING WITH TROOPS

Moscow KRASNAYA ZVEZDA in Russian 30 Jun 83 p 2

[Article by student M. Golubev: "Little Memories, From a Trainee's Diary"]

> [Text] Student Mikhail Golubev underwent practical training with X Motorized Rifle Regiment. With the consent of this future officer, we acquaint readers with some of the entries he made in his diary."

JUNE 3. The third day of my practical training. We've already had several sessions and drills in tactical fire, technical and drill training. I helped plan schedules and discussed regulations with new troops from the spring call-up.

Today the platoon I'm taking my training with had a demonstration exercise on how to load an infantry combat vehicle with a basic load of ammunition. I already know all this; I had it in school. But Captain S. Zorin, our company company commander was perhaps a little more anxious than I. After the exercise he made a few remarks: I'm absorbed in something else and fail to notice the mistakes the men make. I heard the same story yesterday at the firing range. I was happy to have the chance to practice a little at one of the training positions with the grenade launcher operators. But then I caught it from the company commander: why was I depriving the machine gunners of my attention? He's right, of course. But I'd still like a little more time to do what I'd like to do.

JUNE 6. The company has just completed a short forced march. I came in immediately after platoon leader Lieutenant A. Per'kov. I had to give up my position for a most respectable reason: I carried a machine gun for one of his less well-conditioned men. Privates A. Volkov and A. Zhidkov fell behind. I decided to spend a little extra time with them.

Yesterday two other students training in the same company with me, I. Penyaskin and A. Fishchuk, and I had to adjust sights. The company commander was pleased: we got everything right. But then he roundly criticized the session on engineer preparation (the topic was "Engineer Preparation and Camouflage of Positions"). We spent too much time explaining things where a demonstration would have been enough. In a word, we didn't make the best use of our time.

Captain Zorin concluded his critique with a puzzling remark: "On Monday you'll begin a new phase of your practical training." What does he mean by that?

JUNE 7. Now we know. The officers have put us entirely on our own, I suppose you could say. And not only in lesson preparation, but in the educational activities as well. They'll be giving us suggestions, recommendations concerning methodology, checking our plans and so on, but then we're on own own.

Private A. Trunov came over to talk to me today. He's an interesting fellow, mild-mannered, courteous. He asked me how a student goes about getting leave to go into to town. Then he asked if he could get a day's leave to go home, about an hour's travel time from the garrison. I promised him I would talk to the company commander for him. When training was over, Trunov went on leave.

JUNE 11. After evening roll call and taps I offered a couple of observations to Sergeant E. Shikov, presently the company's acting sergeant major. He has yet to demonstrate the required exactingness toward his subordinates. This is the first time I've ever said anything like this to one of the NCOs. If the regimental chief of staff hadn't praised me yesterday for my duty performance at the KPP [regimental command post], I really don't think I would have decided to say anything to the sergeant major about any of his shortcomings.

I conducted two sessions on instructional methodology for squad leaders and then discussed with them questions concerning the need to take an individual approach to subordinates. In the course of our discussion I noticed the ironical glances I was getting from Junior Sergeant Pushkov. What was prompting these looks was all to clear: Private Trunov, on whose behalf I had spoken to the company commander, had been late in returning from his leave, and late by quite a while to boot. That's the individual approach for you. Trust is trust, but I've got to start taking a closer look at things.

JUNE 16. There are no longer any restrictions on what we can do on our own. Before the fire training session yesterday I put a question to Captain Zorin. I asked him what I was supposed to teach the machine gunners and how. Sergey Nikolayevich smiled: "You're not forgetting about the grenade launcher operators?"

I'm in the process of finishing up my study of facilities at the regimental firing range—this is my own individual project. Junior Sergeants S. Leshchev and A. Pushkov are acting as my consultants. They like to help me: it shows in everything. Out there at the firing range we finally decided how we were going to go about teaching Private V. Berketov to be a good marksman; he hasn't quite got it yet.

It was late when I finally said "good night" to the two sergeants. I asked them to please excuse me because I still had to prepare for tomorrow's instruction and then to at least have a look at my political economy—I wouldn't be able to answer a single question. Pushkov squinted at me:

"I don't envy you. You get up before everybody else and then knock off after everybody else...."

Leshchev looked at him in some surprise: "Why don't you envy him?"

JUNE 21. Yesterday the company got together for a general discussion of military ethics. We heard some very interesting comments. There are some really sharp people in this subunit. You've got to know a lot and be able to do a lot to establish yourself with the troops as a man of authority and to stand as an example to them.

JUNE 22. I've filled up my practical training diary tonight. I noticed that Privates Volkov, Zhidkov and Popryadukhin have come a long way after they started putting in some extra work. They don't look any worse than anybody else on the short forced marches now. Private Beretkov has turned into a good, confident marksman. I took a look at what I had on for tomorrow—talk to one of the troops who doesn't write his mother very often for some reason....

Junior Sergeants Leshchev and Pushkov stopped by the office at this point. With his look of intense concentration, Pushkov looked unusually serious:

"Comrade cadet, what are the entrance exams to the school like?"

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DORMITORY FOR SUBMARINERS LACKS MODERN CONVENIENCES

Moscow ZNAMENOSETS in Russian No 5, May 83 pp 28-29

[Article by ZNAMENOSETS correspondent Lieutenant Colonel Yu. Romanov, Twice-Honored Red Banner Baltic Fleet: "Passions Hot in a 'Cold Building', Official Trip in Connection with a Letter: Criteria of Morality"]

[Text] "Here we are," political officer A. Zolot'ko announced.

We piled out of our car. An icy wind gusted in off the sea; screaming seagulls circled over a nearby galley.

I immediately began to study what was, if not some barracks, then another decrepit structure that seemed to match the description of their quarters these submarine warrant officers had included in their complaint to the editors of ZNAMENOSETS. Their building, however, turned out to be a beautiful two-story brick affair standing alone in the middle of an old park.

At first acquaintance you could not help being taken by the place inside and out. It hallways with their high arched ceilings, the large, airy rooms with their windows which let in plenty of light and its utility buildings—these would all have done honor to a museum or military school, for example. The only thing was, though, it had in fact been greatly neglected.

I look into some of the rooms and chat with the occupants. Right off the bat I silently agree entirely with the lady in charge of the place, Biruta Erikovna Rozhkova (she hasn't been here long) that the men we're talking with are of course no angels. A number of these single officers and warrant officers, for example, by no means distinguish themselves with any passion for cleanliness and neatness.

But what's life like here in these quarters?

Warrant Officer L. Karetskiy is not among those with the poorest of humors here.

"The radiators are cold a lot of time at night," he reports. "We have to warm ourselves...with our electric hot plates."

Warrant Officer M. Kulikov then gloomily adds: "There's no shower. We heat our own water and wash and dry our linen and footwear in our rooms. We don't have any dryer, either."

Warrant Officer A. Grinchuk dreams aloud:

"If only we could wash up here in our own quarters and take a shower after an all-hands drill on the submarine. Sometimes you're so tired you just don't have the strength to the bathhouse."

Lieutenant Engineer A. Obsekov expresses his indignation:

"There's no shower, no dryer, no boiling water, nowhere to store your things, no supervision of the procedure for giving out keys, so we see some serious incidents around here fairly often.... Sometimes they'll go a month without changing our linen, and they can manage only a slapdash cleanup around here. Now, we're not squeamish about getting our hands dirty ourselves, but you can't even find a bucket and a rag. We're putting all our efforts into our cruises and exercises. Do you mean to tell me there's really nobody to take care of us here on base?"

So I had finally been able to see for myself that these submariners' quarters, which were supposed to take the place of the warmth and comfort of home for seamen returning from their cruises, weren't even providing them, speaking now in the language of the medical people, weren't even providing them a hygienic minimum. The letter the warrant officers wrote to the editors of ZNAMENOSETS, by the way, was far from cataloging all the problems they were having in their "cold house," which was lacking not only any heat in the boiler, but the warmth of any human concern as well, simple human concern on the part of the command.

There is only one four-burner gas stove for the several dozen people here, despite the fact that there is supposed to be one burner for no more than five. There are only a third as many wash basins as called for by the norm. After a recent slapdash repair job, the plaster in many of the rooms has already begun to bulge and crack; it looks like it's been through an earthquake, and in some places it's already falling off. All the furniture here has long since needed replacing or repairing; the electric receptacles are broken, and the gaping burnt-out sockets are a hazard; the bedclothes are worn out etc.

How in the world is an attitude toward the basic everyday needs of our submariners here like this possible? What can those responsible for these quarters have to say to justify themselves?

Now barely able to hold back her tears, Biruta Erikovna explains:

"The conditions our men here have to live in really are bad. I've already told the commander about it; I even put it on paper. The commander says: take it to the chief of the billeting unit, Captain 3d Rank Engineer V. Gorozhankin; he'll have to help you. But refuses to do anything. He sends me to the MIS [Navy Engineer Service] chief, Captain 2d Rank Engineer V. Kozhukhar'. I gave him a list of all the things we just absolutely had to have, but he just took it and crossed everything out. So I went back to the commander. To make a long story short, I told him I was leaving. A person just can't work like this."

But she's still doing what she can. She straightens the place up; she's put a gas stove in the kitchen to replace the old electric one which was in such poor condition; she's taking down the old ceiling lights that don't work right any

more and replacing the old blinds in the rooms. But now what's with the comrades who are really responsible for taking care of these things for our seamen?

I ask officer E. Romanychev to familiarize himself with the contents of the letter the warrant officers wrote to the editors of ZNAMENOSETS.

"There's a lot of truth in the letter...," he agrees as he reads...but then he immediately begins to contradict himself.

Ernst Aleksandrovich first gave me to understand, as if in passing, that this particular facility was of only secondary importance to him, that he had only "two or three" men there and that these quarters were "financially self-supporting, although the place does get a state subsidy."

"Yes," Romanychev continues, "the manager there is one of my people, but her immediate supervisor is Captain 3d Rank Engineer V. Gorozhankin, chief of the billeting unit.("That's hardly the case," Gorozhankin told me later, a serious look on his face. "She's not on my staff.")

Officer Gorozhankin thinks a little, then says: "Comrade A. Zolot'ko's the one directly responsible for the building. If anything's ever gone wrong with the place nobody's ever reported it to me. There's a lady on duty there; she's got the keys, and she checks to make sure they're issued properly. (Everybody who lives there disputes this statement.) Poor heating? One boiler went out. It did get a little chilly. (The point here, though, is that it's been "a little chilly" for several winters in a row now.) The boilers with the showers? I think they're fixed now; yes they're working alright now."

Suddenly angered by something at this point, Ernst Aleksandrovich launched into a strong, but unprepared, attack on his invisible opponents—the warrant officers and the officers.

"Why do they need a shower anyway?" he questioned bitterly, having only moments before declared that not only was he not implementing whatever directive the USSR deputy minister of defense for construction and billeting had issued, he didn't even know anything about it. "Let them go to the garrison bathhouse if they want to; let them use the city facility. We're not running a hotel here; this is a dormitory (both hotels and these boarding house-style dormitories are supposed to have pay showers). In precisely the same way, E. Romanychev expressed his doubts about another requirement contained in the documents, one saying he has to put a facility in the place for drying clothes and footwear.

"Let'em hang their things outside to dry!" he declared categorically.

And just so the reader can get the full picture of the kind of "concern" Ernst Aleksandrovich has for improving things for the seamen here, let's listen once again to Biruta Erikovna.

"When I asked Romanychev what my responsibilities were, he said to me: 'Make up your own list.'"

The writer of these lines will also remember for a long time the interview he had with Captain 3d Rank Engineer V. Gorozhankin, chief of the coastal base billeting unit.

"They've got showers!" he declared without batting an eye. "The boilers work; Grandpa Yan Yanych looks after the firewood; he's a carpenter there."

"Well, where's all the wood Yan Yanych's getting ready then?" I inquire.

"Let's go have a look; I'll show you."

We walked out of the dormitory onto the grounds. A few little short boards had been heaped up under the overhang of the barn. We walked back to the dormitory in silence. At this point the lady on duty there, Yu. Salmanova, spoke up:

"Those boilers burned out a long time ago. They heat water on the gas stove."

The chairperson of the dormitory council, Chief Petty Officer N. Tsarikova, then disconcerted the officer entirely, who bravely attempted, as they say, to pull the wool over your correspondent's eyes.

"The bathrooms haven't worked for two years now. For two years we've been asking, requesting, and all we've heard are empty promises. I've been to see the coastal base commander, but you don't get any sense out of him."

At this point officer A. Zolot'ko interrupts the chief petty officer:

"I've been here two years now. Nobody's ever even darkened the door here except me. According to the regulations, the superiors of the men here are at least supposed to do that. For two years I've been trying to get the coastal base commander to replace that do-nothing lady they've got in their in charge of the place. It's only recently that we finally succeeded; I finally was able to convince the commander. The chief of the billeting unit helped, but only very little. He points out that the place is supposed to be supporting itself."

Andrey Andreyevich then spun out the long and detailed account of the trials and tribulations he's gone through since he's been in charge of the dormitory here. The problems with the boilers would make up an entire epic. The business with the electric outlets and the radio relay system would make you a novel....

"The years have gone by, and nobody's ever wanted to do anything about these problems. And the temperature level of the passions inside this 'cold house' has just about reached the ignition point."

But now it's time to stand back and analyze the whole situation.

Officer E. Romanychev, of course, cannot be oblivious to how important it is for the operational efficiency of our ships for the seamen who man them to be able to rest up completely when they return to base. Neither can he, a communist, fail to understand the importance of the party's concern for people and their everyday needs. But how in the world are we to account for the attitude he has shown toward his responsibilities then? In the first place, it is in fact officer

Romanychev's fault that requirements imposed by the USSR deputy minister of defense are not being complied with in the case of the submariners' quarters here. He is not familiar with the basic documents defining his responsibilities in connection with his position as man in charge of the place. Neither has he assigned his subordinates specific responsibilities on the basis of these documents. He either does not know or has been misinformed concerning the state of affairs at the facility and is not fulfilling promises made to the building council. So it comes as no surprise that with an attitude like this toward his official responsibilities on the part of Romanychev himself, the officers he has subordinate to him, with whom I had a chance to get acquainted, seem to compete with one another in seeing who can demonstrate the greatest negligence toward responsibilities. This and only this is the main reason these quarters have been so neglected.

There is, however, hope that authorities at the coastal base here will begin to demonstrate not in words alone, but now in deed their concern for the living conditions for the submariners and at long last to study the directive issued by the USSR deputy minister of defense and other documents and finally to implement them as intended. Effectively, the military way, the Navy way. Then we'll the inflamed passions begin to subside and the Navy quarters in the solitary old building transformed into a warm, cozy home.

FROM THE EDITORS: The editors received a letter concerning this matter after the preceding article had already been prepared for the press. It reported, among other things, that the lady who had been in charge of the building here had been fired for her "inactivity and apparent inability to get anything done on her own initiative. Another lady, more energetic and interested, has been hired in her place. A plan to improve the building has been drawn up and is now being implemented. Work is now under way in accordance with this plan to repair and improve the lavatories and showers and to improve and beautify the building grounds.... Those responsible for holding up the work to be done here along with the chief of the billeting unit, Captain 3d Rank V. M. Gorozhankin, have been subjected to disciplinary punishment. Captain 3d Rank Gorozhankin has, furthermore, been warned that if he fails to demonstrate a changed attitude toward his service duties, he will be transferred to work entailing fewer responsibilities."

This letter, of course, cannot but be a source of satisfaction. Now only one question remains unanswered: what was it that kept these things from being done before?

The editors will check to see how the plan to improve and beautify the facility and grounds is being implemented and will report what they find to the readers.

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PERCEPTIONS, VIEWS, COMMENTS

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Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 pp 1-2

[Text]

GENERAL MILITARY PROBLEMS

GROUND FORCES

AIR FORCES

NAVAL FORCES

The articles by Soviet authors and the chronicle were prepared from foreign press materials. This issue used illustrations from the "Jane's" reference and the journals: AVIATION WEEK AND SPACE TECHNOLOGY, AVIATION AND MARINE, ARMADA, ARMED FORCES JOURNAL, ARMIES AND WEAPONS, ARMY TIMES, AEROJET, WERTECHNIK, DEFENCE E ARMEMAN, DEFENSE, SOLDAT UND TECHNIK, INTERAVIA, INTERNATIONAL DEFENSE REVIEW, INTERNATIONAL REVIEW, KAMPFTRUPPEN, CONTAINER NEWS, NATO'S FIFTEEN NATIONS, NAVY INTERNATIONAL, NATIONAL DEFENSE, PROCEEDINGS, TRUPPENPRAXIS, FLIGHT, FORCE ARMEE FRANCAIS, AIR E COSMOS, EUROPEISHE VERKUNDE, EKHERSITO, U. S. NEWS AND WORLD REPORT.

NOTE: * indicates articles translated in full.

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U. S. MILITARY PSYCHOSIS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 3-7

[Article by Col E. Grigor'yev: "The U. S. in the Grip of a Military Psychosis"]

[Text] The period of the late 1970's and early 1980's was marked by an escalation in the aggressiveness of U. S. imperialism, to the limits of the heated international situation. Washington's military-political doctrine is increasingly oriented on force, and its crude and repeated use even in peacetime. The interventionist policy of the United States is being implemented step by step, methodically and with calculation. Military power is proclaimed in Washington as the main, and nearly the only "prerequisite to peace." Adventurism, mindless readiness to play with the fates of mankind, and an inclination to solve the vital questions of our time with the aid of threats and sabre-rattling are characteristic traits of the policy of the present U. S. administration. This is clearly manifested in the White House desire to inflame sharp conflicts, in the unrestrained arms race, in expanding military preparations, and so forth.

Simultaneously, moral and psychological pressure on the U. S. population is intensifying, in order to justify the government's adventuristic policy, to more actively involve the population in military preparations, and to poison consciousness with the toxins of chauvinism, anti-sovietism and anti-communism. The unprecedented "militarization of minds," painstakingly worked out by the special services and coordinated with the overall thrust of the country's domestic and foreign policy, has the aims of inculcating thoughts of the possibility and even the acceptability of nuclear war in millions of Americans, and of suppressing any resistance to the unprecedented arms race. They are being inclined in a military direction and inculcated with a feeling of hostility toward the USSR and the other countries of the socialist community.

Military hysteria and anti-communism have long been elevated to official Washington state policy, however, never before have they achieved such intensity as now. A distinctive feature of the military psychosis and anti-Soviet fever being inflamed at present in the country is the active participation of representatives of the highest levels of power in this unseemly matter. The President publicly threatens to write off communism as a "strange, unnatural phenomenon in the history of mankind." The Secretary of State loudly declares

that "there are things more important than peace," and the Secretary of Defense reiterates the need to "strengthen our positions in the world with the aid of weapons."

The American historian G. S. Commadger writes that the White House, which has been a prisoner of the "cold war" philosophy since the 1947 "Truman Doctrine," is now trying to bring its anti-communist policy to a "heated condition." The scholar speaks fairly about "anti-communist insanity" in the United States, about the reign there of "paranoid hostility toward the Soviet Union," and about a "readiness to flirt with nuclear war." Using the press, radio and television, officials of various ranks instill the same thing in Americans: arm, arm and arm, in order to destroy the existing parity and achieve military superiority over the Soviet Union. In other words they are persuaded: if you want peace, prepare for war at full speed, bury yourself in the earth, conceal yourself wherever you wish, but prepare.

In recent years, attempts to school Americans to the possibility of nuclear war, to thinking that it is not so catastrophic after all, have constituted one of the main directions in which the militaristic psychosis in the U. S. has been forced. Representatives of the Reagan Administration are setting the tone. State and military figures have begun to openly proclaim the admissibility of unleashing both a global and a "limited" nuclear war, and about their willingness to resort to "demonstrative" and "preventive" nuclear strikes. Moreover, some highly placed White House officials believe that the United States can survive and even achieve victory in a nuclear catastrophe. As Marshal of the Soviet Union Comrade D. F. Ustinov, CPSU Central Committee Politburo member and minister of defense, declared, "In the U. S., nuclear war is being shifted into a possible and under some circumstances expedient category, and practical preparations for nuclear war are being carried out, stemming from the tasks of 'gaining the upper hand,' that is, gaining victory."

The hackneyed myth about the "Soviet military threat" is whipped up more strongly to justify the aggressive policy of the American administration in the eyes of the public. Contrary to the truth, people are told repeatedly about the "military superiority of the USSR," and the "aggressive nature" of Soviet military doctrine, and shameless lies are told about the U. S. "lagging behind," especially in the area of strategic arms. With these aims in mind, massive editions of fraudulent official documents are published, such as "Soviet Military Power," "NATO and the Warsaw Pact: Force Comparison," and others.

The bourgeois mass media, fulfilling the social order of militant anti-soviets, is actively carrying militaristic declarations of Washington officials, and is using them to spread an atmosphere of military psychosis. In this area television is most significant, as it has broad influence on practically all segments of American society. Actively popularizing the utterances of militaristic public figures, television supplements them with "artistic" productions which develop the worn out theme of the "Soviet military threat," and the inevitability of a "Russian nuclear attack."

In mid-1981, for example, CBS showed a multi-part film, "The Defense of the United States," the underlying theme of which was the idea of nuclear war in Europe. As the American press noted, "for five days during the course of an hour the viewers could experience an uncommon feeling of terror caused by the evolution of United States' nuclear strategy," and be convinced of the need to increase the U. S. nuclear capability in Europe to insure...the defense of the United States. The concoctions of bourgeois propaganda about the deployment of new missiles in the European part of the Soviet Union were presented as the main argument.

Six months later the American television viewer was shown a regular television film with the expressive title, "The Third World War," in which the United States itself was represented as the arena of nuclear conflict. The film, which created the impression of a growing catastrophe, illustrated in its own way the numerous false statements of officials about the inevitability of a Soviet nuclear attack. Its main aim was to promote the American thesis of the possibility of a first, preemptive attack by the USSR. As a reporter in the film states, "the President and the Pentagon are currently concerned that the Soviet Union may be tempted to begin what is called a 'limited nuclear war.' As the result of a surprise USSR attack up to 90 percent of American land based missiles and a large portion of its bombers will be wiped from the face of the earth. This act deprives us of the capability to inflict a retaliatory strike, and we (i.e. the U. S. -- author) will be forced to surrender. And, as they say, we are now completely vulnerable to a Soviet strike." At this point in the film is inserted a speech of President Reagan, who declares tendentiously: "The Soviet Union believes that nuclear war is possible, that it is possible to survive this war, and that it is possible to win this war. And they will win it... According to intelligence information casualties will be 10:1 in favor of the USSR."

To make the inventions about the inevitability of nuclear catastrophe and the approaching war with the Soviet Union more convincing, the film's authors interlaced into the plot present day realities and ill-intentioned inventions. Thus, the film begins by showing materials about the embargo of grain deliveries to the USSR, which really happened. But further there is an unrestrained fantasy of nuclear maniacs. Not at all accidentally, the script writers throw "Soviet saboteurs" into Alaska: At that time all America was worked up by the later refuted falsehood about Libyan terrorists coming from the north for supposed assassination attempts against U. S. leaders.

The intentional "leak" to the press and surfacing of all sorts of plans worked out in the depths of the CIA, Pentagon and other departments, especially of U. S. "nuclear strategy" in the event of "global conflict" with the Soviet Union, have become typical of American reality in recent years. Periodically repeated false alarms, declared as a result of errors by personnel or malfunctioning equipment in the nuclear strike warning system, have become tested means of inculcating into Americans' consciousness thoughts about the inevitability of a "Russian nuclear attack." Sensational accounts of this not only strengthen the belief in the possibility of a real nuclear strike against the United States, but also serve as a pretext for lengthy discussions about what might have occurred had the alarm not been false.

The attitude of panic is heated up from time to time by widely publicized prognoses about how many Americans may perish in the event of a nuclear war. In 1965, American military experts came to the conclusion that the U. S. would lose no fewer than 60 - 80 million people as a result of a first nuclear strike. Fifteen years later this figure had risen to 120 - 130 million. Recently, however, since the process of convincing Americans about the acceptability and advisability of nuclear war has begun, they have started to say that deaths may be limited to only 40 - 50 million.

Widespread discussion by the mass media of how and by whom the United States would be governed under conditions of nuclear war has become one of numerous methods of whipping up military psychosis. Thus, reviewers recalled the law which Congress enacted several years ago about presidential successors in the event of the President's death or inability to fulfill his duties and began to ascertain whether the successors knew the actions they were to take if a nuclear catastrophe were imminent. The NEW YORK TIMES wrote that: "Speaker of the House of Representatives Thomas O'Neill, Jr., who stood second in the line of succession behind the Vice President, refused to discuss the question, but, as it became known from informed observers, the Speaker had been instructed and trained in what to do in times of emergency." Senator Strom Thurmond, who followed O'Neill on the list acknowledged that he also had received appropriate instructions.

For the same purposes, the question of from where the president and his staff should govern during a nuclear war is periodically brought up. With full seriousness proposals are made about developing, in addition to the existing airborne command post, a similar command post on a submarine, to be used in case the aircraft is destroyed. The WASHINGTON POST wrote that Reagan Administration plans even envision "equipping a mobile command post for the President, camouflaged as a furniture truck, which would travel along remaining undamaged interstate highways."

Public discussion of the details of such ideas, proposals and plans, most of which make no sense, not only inculcates in ignorant citizens thoughts of the inevitability of a nuclear attack from the Soviet Union, but also raises natural questions in the minds of ordinary Americans: We will grant that the government continues to exist, but will the population which it is supposed to govern remain? What must I do to save myself and my family in nuclear war? Under such conditions, civil defense measures carried out in the U. S. have considerable influence on forming impressions in millions of Americans about nuclear war, its consequences and methods of protection.

The geographic position and historical development of the United States, which have not require Americans to defend against foreign invasion or experience the terrors which befell the peoples of Europe and other continents during the world wars, until recently have not compel Americans to think about the fate of the civil population in event of war. As a result of this, as the foreign press notes, the growth of the power of the Soviet Union, and the downfall of impressions of U. S. military superiority over the USSR, have made Americans badly susceptible to ideas of a "foreign threat," which have been artificially

created and fomented by U. S. ruling circles since the 1950's, and the American population has developed feelings of uncertainty, apprehension and fear. It is not accidental that many Americans easily yielded to the mass psychosis of constructing private bomb shelters, which was intentionally whipped up in the early 1960's, and which, according to Senator A. Cranston, devoured 200 million dollars. The senselessness of such a venture very soon became apparent to its victims, but it left a deep psychological scar.

Recently, questions of civil defense have again been at the center of public attention. As NEWSWEEK wrote, "after two decades, during which Americans recognized that only a few would survive a nuclear war, the Reagan Administration intends to spend $4.2 billion in the next seven years to implement a plan for the mass evacuation of the population from cities and other places of 'heightened danger'."

A very primitive logical basis for the need to adopt a civil defense program was established, taking into account the citizens' faith in anti-soviet fabrications. According to foreign press accounts, it was essentially this: The Russians are spending substantially more than Americans on plans for population evacuation and sheltering industrial enterprises. This means that they are preparing to unleash and win a thermonuclear war, and they believe that they might withstand a nuclear strike better than the U. S. and more quickly recover from such a strike. Therefore, the "balance of terror" has been destroyed and the best way to reestablish it is to reduce the gap between the two countries in civil defense capabilities. For many Americans, who have been taught to think in terms of the inevitability of a Soviet nuclear attack, and who are burdened by growing military expenditures to the detriment of many social programs, this has seemed and continues to appear to be an intelligent variant.

In order to reduce fears, American propaganda has recently been more than optimistic in its portrayal of life following a nuclear catastrophe. For example, the press reports the following fact: 9 of the 12 Federal Reserve Banks have underground facilities for emergencies, and their reserves are renewed daily, so that even after a nuclear strike they are prepared to serve millions. Americans are advised in all seriousness not to leave home without their checkbooks in the event of a nuclear war, since they may come in handy. "The overwhelming majority of the U. S. population may escape death in a nuclear conflict," one of the country's civil defense leaders discusses with cynical ease. "It is only necessary for each citizen to dig himself a hole, hide in it, and close the door above." In the opinion of specialists it is unlikely that it will be possible to protect oil refineries or heavy industry, but "those things which people are most accustomed to will probably survive." They categorically assert that communications will remain, since telephone cables are reinforced against nuclear weapons effects, and life after a nuclear catastrophe will, they say, take its normal course.

In the stream of such information,it is difficult for the ordinary American to understand that the civil defense plan proposed by the Reagan Administration has the primary goal of intensifying ideological-psychological influence over the masses in such a way as to ease the implementation of the present dangerous

militaristic policy, and dampen the people's will to struggle against this policy. The authors and apologists of this plan are clearly counting on reconciling millions of Americans with the thought of the possibility of surviving a nuclear catastrophe by their evacuation from 400 areas of "heightened danger" to 2,000 areas of "temporary accommodation." For this purpose the program proposes that, starting in 1983, such a plan for evacuation in the event of the threat of war be included in telephone inquiries, which are very often used in the U. S. As the WASHINGTON POST wrote: "This program is intended to demonstrate to the Russians our ability to survive in the fire of a nuclear conflagration and to show that the idea that 'mutual assured destruction' is the best deterrence to nuclear war has ended forever. This more than frank admission bears witness to the fact that the large scale program for developing civil defense is intended not to defend the country's population, but to provide American militarists the opportunity to unleash a nuclear war.

A typical bourgeois propaganda trick for inflaming passion was used to more actively attract public attention to the problems of survival in a nuclear war. For example, in Los Angeles officials proposed that first to be evacuated in the event of the threat of nuclear war would be "young, healthy, physically prepared specialists of all professions, taking into account a careful balancing of the work force. Last to be evacuated would be the elderly, weak, untrained, unnecessary, and those whose presence in the evacuation area would only be a burden to the survivors." Naturally this caused a strong negative reaction from a significant part of the population. In Memphis, where the plan envisioned giving preference to the main officials of the city, heated disputes arose about who should be so considered. Noting the extremely cruel nature of the ideas proposed, the LOS ANGELES TIMES wrote: "Nuclear war is not a joking matter; however, the authorities are acting with complete disconcern, only making bad jokes."

Most of the proposals contained in the Reagan civil defense plan were received critically by thinking Americans. They guessed the real meaning of this venture. According to the statement of Senator Cranston, this plan is a "terrible and dangerous fraud, which creates the false impression that nuclear war...is acceptable and that it is even possible to achieve victory." However, during the course of a public opinion poll more than half the Americans polled believed that the proposed measures would significantly (18 percent of those polled) or to some extent (34 percent) improve their chances of surviving a nuclear attack.

On the whole, the whipping up of military psychosis and an atmosphere of militant anti-sovietism has a significant influence on forming the world outlook and impressions of many Americans. At the same time, a powerful anti-war movement is spreading ever more widely of late in the United States. In explaining the growth of anti-militarist sentiments among millions of ordinary Americans the foreign press wrote that they had felt a latent alarm about the possibility of a nuclear confrontation even before, but under Reagan this threat had reached extremely dangerous limits. Every sober-minded U. S. citizen is more and more becoming convinced that the foreign policy of the current administration is directed at preparing for war.

However, the ruling circles are trying to ignore public opinion, counting on the recommendation of one of the fathers of the "cold war," John F. Dulles, who instructed: "In order to force the country to undertake the burden which the development of powerful military forces demands, it is necessary to create an emotional atmosphere, close to military hysteria. It is necessary to cause fear of danger from without." Washington's psychological offensive against the American public, the purpose of which is to provide a basis and justification for the unprecedented arms race and confrontation with the Soviet Union, and in the final analysis for a "limited" or, according to the Pentagon's latest plans, a "protracted" nuclear war, is continuing at an increasing tempo.

9069
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WEST GERMAN TRAINING EXERCISE 'STRONG DEFENSE'

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 7-13

[Article by Maj Gen N. Ivlev]

[Text] The Reagan Administration, with the active support of Great Britain, the FRG and other bloc countries, is making significant efforts so that the powerful military fist created in Western Europe -- the NATO Combined Armed Forces -- is more rapidly equipped with the latest means of warfare and is in constant readiness to fulfill the aggressive designs of imperialism. For this purpose, large unit and unit organization is being improved, new methods of conducting active combat actions in the first operations of a future war are being sought, and the role and purpose of general purpose forces in battle (operation) are being clarified, while the principle of first use of nuclear weapons is retained.

According to the bloc command, the introduction into the forces of NATO countries of precision weapons sharply improves combat capabilities. It is considered possible with the newest weapons systems to inflict maximum destruction on enemy second and follow-on echelons, and on aviation at its permanent airbases. In this case the enemy first echelon would find itself cut off from supply bases and reserves. It is no longer a question of defending "intermediate lines" back to the Rhine, as NATO generals have presented it to the public. It is a matter of inflicting an overwhelming strike against Warsaw Treaty Organization [WTO] forces to their full depth, in order to create the conditions for conducting military operations on WTO territory.

The NATO command understands that equipping its forces with new, more effective weapons does not solve the task entirely. It is necessary to train personnel and staffs to employ these weapons ably and to acquire a new understanding of the nature of battles and operations. For this purpose, the scope, scale and number of various exercises in Western Europe increases each year. Plans are worked out in large scale maneuvers such as Autumn Forge, Wintex, and others for preparing and conducting operations in the first period of the war using conventional, chemical, and tactical nuclear weapons. The largest exercises have taken place in the Central European Theater of Military Operations.

In particular, within the framework of Autumn Forge-82, Exercise "Strong Defense," a comprehensive, two-sided troop exercise of the 1st FRG Army Corps,

was organized. In this exercise, besides regular FRG ground forces, territorial forces and air forces, staffs and units from the armed forces of the U. S., the Netherlands and several other NATO countries participated.

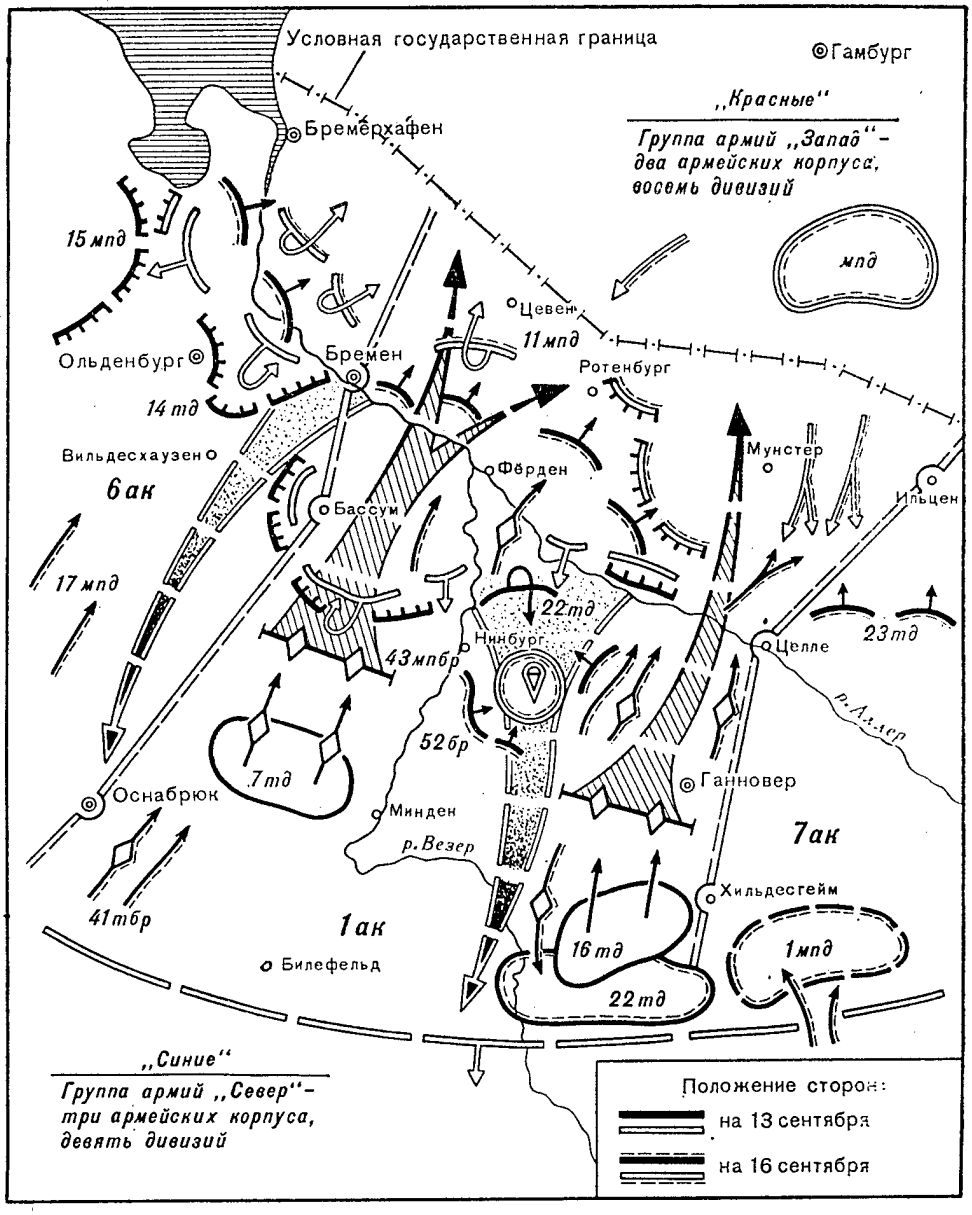


Рис. 1. Замысел и ход учения бундесвера «Штарке вер»

(Figure 1). Concept and Play of Bundeswehr Exercise "Strong Defense"

The exercise took place from 10 - 17 September 1982 in the Northern FRG (Lower Saxony and Northern Rhine-Westphalia), and military operations took place in the area Bremerhaven - Oldenburg - Osnabruck - Hildesheim - Uelzen - Hamburg (Figure 1). The terrain in this part of the North German Plain is flat or rolling, broken by a dense network of rivers and canals. As noted in the foreign press, the Weser and Aller Rivers and the Ems - Weser - Elbe Canal are the most difficult places to force. West of Oldenburg is the largest swampy area (1,400 square kilometers). However, in the opinion of NATO specialists, the presence of well developed lines of communication favors the massive use of tanks and other combat equipment and the achievement of high offensive tempos.

As the foreign press reported, the main objective of Exercise "Strong Defense" was to test the combat capabilities of the 1st Army Corps (following its reorganization) in coordination with the Air Forces and the NATO allies, in operations in the first period of the war. Primary attention was devoted to testing the realism of plans for bringing large units and units to complete combat readiness; studying how improvements in large unit combat capabilities under the new organization affect the nature of the corps' combat operations; mobilizing reservists to bring regular forces up to full strength, and to deploy units of Territorial Command "North;" march training of exercise participants; conducting offensive and defensive operations with large scale use of assault landings while employing conventional and chemical weapons; conducting concealed command, control and coordination of staffs and units of various nationalities, and of ground forces with tactical and army aviation; organizing air defense and logistical support.

Actual participants in the exercise included: From the FRG -- 1st Army Corps Headquarters, 11th Motorized Infantry Division, 7th Tank Division, 27th Airborne Brigade, 9th Airborne Division, 52d Home Defense Brigade, and other units and sub-units of Territorial Command "North;" from the Netherlands -- 43d Motorized Infantry Brigade; from the U. S. -- 3d Brigade/2d Armored Division. Air support was provided by FRG and other bloc countries' air forces assigned to the 2d Joint Tactical Air Command, and by reinforcing sub-units from the U. S. Air Forces. Altogether approximately 40,000 military personnel participated in the exercise, including 5,000 FRG reservists. More than 2,000 tracked vehicles, 1,200 wheeled vehicles, up to 250 combat aircraft and 150 army aviation helicoptrs were used. The umpires and control headquarters (more than 8,000 persons) came from personnel and vehicles of large units and units of the 1st Army Corps, Territorial Command "North," the 9th Airborne Division (FRG), the 41st Tank Brigade (Netherlands) and the 2d Armored Division (U. S.).

As the foreign press reported, preparation for Exercise "Strong Defense" began ahead of time. After the planning documents and orders were prepared, command-staff exercises, specialized tactical training, practice and briefings were conducted. Thus, in May 1982 command-staff exercises of the 7th Tank Division, rocket artillery units, and 1st Army Corps Headquarters took place; in June troop training of the 3d Tank Division; and in July specialized communications training of 1st Army Corps and briefings of the umpires, as well as reconnaissance of the area in which the exercise military operations were going to be conducted. Considerable attention was given to individual training of activated reservists and to the cohesiveness of newly formed units and sub-units.

An exercise state border was established for the exercise, taking into account ranges and training areas, which followed the line Bremerhaven - Zeven - Uelzen. The "reds" ("aggressor") operated to the north and the "blues" to the south of the exercise border. As always, the aggressive design of this exercise was masked by an attack by the "reds" and defensive operations of FRG and NATO forces in the initial stage of the operation. However, during the course of the exercise, "blue" holding actions were conducted only as command-staff exercises, while the troops actually worked out immediate offensive missions.

According to the exercise concept, in mid-summer 1982 the military-political situation in Europe became sharply aggravated. In the latter half of August the "reds" secretly began to deploy offensive groupings, and on 8 September, following air strikes, went on the offensive in the general direction of Hamburg - Osnabruck, with the objective of gaining the forward defensive line of the "blues," defeating the "blue" first echelon main forces, and creating the conditions to break into the "blue" operational depth.

The "blues," having detected the threatened offensive, moved forward units to the border, rapidly transferred forces from peacetime to wartime positions, quickly departed for their operating areas, and by active holding and defensive operations during the course of five days, stopped the "red" offensive on the line Celle - Schweringen - Bassum - Bremen - Oldenburg. In the wake of massive strikes from the 2d Joint Tactical Air Command and artillery, "blue" conducted a counterattack with its second echelons, and shifted to a general offensive with forces of three army corps.

The Western press notes that this scenario enabled Bundeswehr large units, in coordination with allied forces, to work out the organization and conduct of offensive and defensive combat operations and also aspects of the meeting engagement. In so doing, both sides conducted splitting attacks to most rapidly push forces into the depth and prevent the advance of enemy second echelons. Reserve large units were brought in to destroy surrounded forces.

Actual NATO players included, for the "reds," the 11th motorized infantry division (FRG), and 3d Brigade/2d Armored Division (U. S.); for the "blues," the 7th Tank Division, 52d Home Defense Brigade, 27th Brigade/9th Airborne Division (FRG) and the 43d Motorized Infantry Brigade (Netherlands). The following corps units also participated: an artillery and an air defense regiment, two air defense artillery battalions, three helicopter regiments, radio technical, communications, engineer, pontoon, protection against mass destruction weapons, supply, transport, repair, and medical and sanitary battalions, and reconnaissance sub-units. Second Tactical Air Command large units supported both sides. The 4th Air Defense Division (FRG) and a Nike-Hercules air defense missile battalion (Netherlands) operated in the role of the NATO Joint Air Defense System.

As the Western press noted, testing the combat capabilities of large units and units of the new Bundeswehr organization (mobility, firepower and battlefield maneuverability), and organizing and conducting offensive operations received primary attention during the exercize. In connection with this, it was

envisioned that combat operations would begin with an immediate counterstrike; that is, an actual shift to the offensive by the powerful "blue" battle group. Holding actions and defensive operations had to be developed as hypothetical exercise inserts.

At the start of the exercise the troops left their permanent garrisons, and accomplished march and deployment into operational areas (according to the concept). The 7th Tank Division checked march training performance. The troops followed their route, and heavy equipment was transported by rail under conditions of strong "enemy" aerial opposition. In reality, tactical aircraft from the air forces of the FRG, U. S., Belgium and the Netherlands took part. Two days were required to alert personnel, move out to the assembly area, conduct the march (up to 200 km) and bring the divisions to full combat readiness in the departure area. The Western press noted that a considerable amount of work was done by the provost marshals of the provost-traffic control areas (for example in Essen, Munster and Oldenburg) to support the march of the 7th Tank Division. It was necessary to calculate times and distribute the road network for the passage of more than 5,000 items of combat equipment. It is emphasized that modern computers were widely used to make calculations. Computer assistance was used in the Olderburg Provost Office to calculate route sectors for 153 sub-units. Special sub-units of territorial forces, as well as engineer sub-units (units) of regular forces were used in conducting a river crossing, and helicopter sub-units were widely used. March columns moved compactly, strictly observing established intervals. Movement speed reached 70 km per hour on the autobahns and 45 km per hour on other roads. Communications helicopters were used to control units and sub-units during the march.

The active phase of Exercise "Strong Defense" began on 13 December and consisted of two stages.

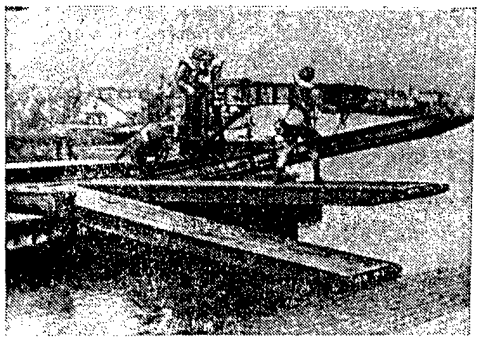
During the first stage (13 - 15 September) the sides worked out the following problems: "Red" -- consolidation on the line attained, defensive operations and withdrawal; "blue" -- regrouping forces, shifting to the counteroffensive, developing success in the depth of the enemy defense, and repulsing a counterattack.

The "reds" used chemical weapons widely (Figure 2) and on 13 September attempted to break through the "blue" forward defensive line. The next morning they struck on the Oldenburg-Wildeshausen axis, but they failed, and due to the developing threat of encirclement had to defend in this sector. During the next two days, they conducted defensive battles, consolidated part of their forces on the northern bank of the Weser River, and simultaneously prepared a two division offensive on the general axis Rotenburg-Hannover.

(Figure 2). Clarifying the Mission During Chemical Warfare Conditions

The "blue" forces conducted an active defense on the first day on the line Oldenburg - Bremen, brought up reserves and prepared to inflict a counterstrike on the axis Minden - Verden to destroy the "enemy" penetration and develop the offensive into the depth.

Forward movement of the "blue" reserves conducting the counterattack was conducted along six routes. The 3d Air Support Division and air defense artillery and engineer units were enlisted to support the march (actual) and the entry into battle of the 7th Tank Division which had been in reserve. Electronic warfare was widely employed. The division's offensive (on the left flank of the 1st Army Corps) was supported by massive air strikes, anti-tank helicopter sub-units and artillery. Essentially all the corps artillery was concentrated here. Taking divisional artillery into account, this permitted creating a density of up to 110-120 guns per kilometer of front. Defending units, including the 52d Home Defense Brigade, were withdrawn to the corps reserve. By the end of 14 September, "blue" forward detachments had seized a bridgehead on the north bank of the Weser River, and secured its forcing by the main forces of the 1st Army Corps (Figure 3). During the following days, corps large units on the right flank continued a successful offensive, but on the left flank, having met stubborn "enemy" resistance, were forced to shift to the defense, and conducted a partial force regrouping to repulse the "red" counterattack which was in preparation.



(Figure 3). Pontoon Battalion Preparing Weser River Crossings

In the second stage (16 - 17 September), the "reds" prepared to execute a counterstrike, develop the offensive, and conduct a meeting engagement. The "blues" prepared active defensive operations, a counterstrike and a meeting engagement.

On the first day, two divisions of "red" forces conducted a counterstrike on the axis Zeven - Hannover to defeat first echelon forces and gain the Minden - Hildesheim line. A tactical airborne assault landing was conducted 20 km northwest of Hannover to seize crossings over the Leine River and support its forcing by the main forces. In order to destroy the assault, the 1st Army Corps Commander used the 52d Home Defense Brigade, which at that moment was in corps reserve. On the left flank the "reds" continued to develop the offensive. At the same time they were meeting stiff enemy resistance on their right flank and were forced to conduct defensive operations on the line Oldenburg - Bremen.

The "blue" forces conducted active defensive operations, stopped the enemy on the north bank of the Aller River, and simultaneously moved forward their reserves (up to two divisions) to carry out a counterstrike and shift to a general offensive. A meeting engagement episode was played in the area Munster - Celle - Uelzen. The 21st Tank Brigade/7th Tank Division ("blue") and the 33d Tank Brigade/11th Motorized Rifle Division ("red") were the actual participants. With this the active phase of the exercise concluded.

FRG Inspector of Ground Forces Lt Gen Glantz remarked that corps exercises such as "Strong Defense" were necessary for the Bundeswehr, as they test the new large unit and unit organization and the capability to solve combat missions, taking into account modern and future combat equipment and weapons. In addition, Glantz stressed that it is an oportunity to more completely work out coordination of ground and air forces and various national forces, as well as problems of the combat use of teritorial forces. The exercise showed that the brigades of foreign troops (in this case U. S. and Netherlands), despite differences in organizational structure and language, can be successfully controlled by the headquarters of a Bundeswehr division.

In the opinion of Lt Gen V. Altenburg, commander of the FRG 3d Army Corps, the ground forces reorganization and their equipping with new combat equipment creates real conditions in the event of war for the Bundeswehr and its NATO allies, operating jointly according to the "forward defense" strategy, to inflict a devastating defeat on the first strategic echelon of the armed forces of the WTO. The main mission of the Joint Air Forces of the bloc (taking new weapons and reconnaissance systems into account) is not "destroying tanks in front of their noses," but inflicting powerful strikes against second echelon forces.

As the Western press noted, during the exercise the large units and units of both sides operated in accordance with the regulations and operational-tactical norms adopted in the FRG armed forces. The battle formation of a corps (division) in offensive and defensive operations is usually structured in two echelons. The width of the zone of advance (defense) of an army corps is 60-70 km (80 or more for defense); of a division -- 25-30 km (40-50); of a brigade -- up to 15 km (20). The immediate mission of an army corps is up to 60 km and of a division is 25-30 km. Their subsequent missions are up to 150 and 60 km respectively. The average rate of advance is 20-30 km per day.

The foreign press reported that during Exercise "Strong Defense" great attention was paid to working out the problems of coordinating ground forces large units and units with tactical and army aviation, and to organizing air defense. Units and sub-units from Belgium, Great Britain, the Netherlands, U. S., and FRG were drawn from the 2d Joint Tactical Air Command. They accomplished missions of aerial reconnaissance, direct air support, isolating areas of combat operations, and air defense. The Alpha Jet fighter-bombers were used widely in this exercise for the first time. Up to 100 or more aircraft sorties per day were flown in support of each first echelon division. Air support was accomplished primarily from altitudes of 90 and 300 meters in groups of 8-12 aircraft. The "enemy" air defense system was defeated by aircraft at low and very low altitudes with active use of jamming. One of the important goals of the exercise was to work out problems of coordinating air defense forces, weapons and equipment with tactical aviation and ground forces.

Army aviation was used widely during the course of the exercise. It participated in anti-tank combat, reconnaissance, troop crossing operations, etc. For example, 14 CH-53 transport helicopters and 6 UH-1D utility helicopters were used for the tactical airborne assault landing.

A regiment of anti-tank helicopters from army aviation was called upon for the anti-tank battle. The division (brigade) commander elected to destroy "enemy" tanks using fixed-wing aircraft or anti-tank helicopters, depending on the situation. The BO-105P anti-tank helicopters operated actively. They destroyed tanks of forward moving "enemy" reserves suddenly and from ambush, using terrain contours. Firing on tanks was conducted at ranges of 2,500-3,000 meters. The brigade on the axis of the main strike was reinforced with a flight of anti-tank helicopters (7 aircraft).

Questions concerning the mobilization and combat employment of Home Defense units were studied in broad outline during the exercise. For example, the 52d Brigade (assigned to the 1st Army Corps), in addition to supporting forward troop movement, defending rear objectives and destroying reconnaissance and sabotage groups, conducted combat operations in the first echelon and was then called upon to destroy an airborne assault.

Peacetime troop reinforcement was accomplished not only by mobilizing West German units, but also by movement from the U. S. The personnel of a tank battalion of the 2d Armored Division were moved on five C-141 aircraft, which completed a non-stop flight from the U. S. to Ramstein (FRG) in 10 hours. Then the sub-units obtained 40 M60 tanks from depots in Germersheim, and after 16 hours arrived at the exercise area south of Bremen. The Western press wrote that approximately 30 hours were required for the American battalion (500 personnel) to move from the continental U. S. (Texas) and enter battle on the Weser River (FRG).

The capabilities of troop control organs and resources were tested under various conditions in the exercise. Forward, main and reserve command posts and rear control points were deployed in the corps and the divisions. The corps main command post was 40-50 km and the division command posts up to 25 km from the forward edge. Radio, radio relay, wire and other types of communications,

the Autoco automated communications system and secret troop control resources were used for reliable control of large units and units. Primary attention was paid to the effectiveness of the new equipment and to the increased effectiveness of message dissemination under conditions of massive use of electronic warfare.

Importance was also placed on material, technical and medical support of the troops. Additional depots and supply bases for ammunition, POL and food were deployed. Points for the repair and overhaul of combat equipment and weapons were set up on the march routes of large units and units. During the exercise, techniques and methods for combat use of new weapons and military equipment -- Leopard-2 tanks, FH70 155mm howitzers, BA-105P anti-tank helicopters, and the Roland-2 antiaircraft missile system -- were improved. Tactical airborne assaults, maneuver by tactical combat groupings, and maneuver by fire were used to maintain high offensive tempos.

Year after year, in accordance with both NATO and national plans, various exercises, representing openly provocative demonstrations on the borders of the countries of the socialist community, grow in scope and intensity. This requires that the soldiers of the Soviet Armed Forces increase their vigilance and combat readiness, in order to give a devastating rebuff to any aggressor.

9069
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SPAIN'S GROUND FORCES REVIEWED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 23-27

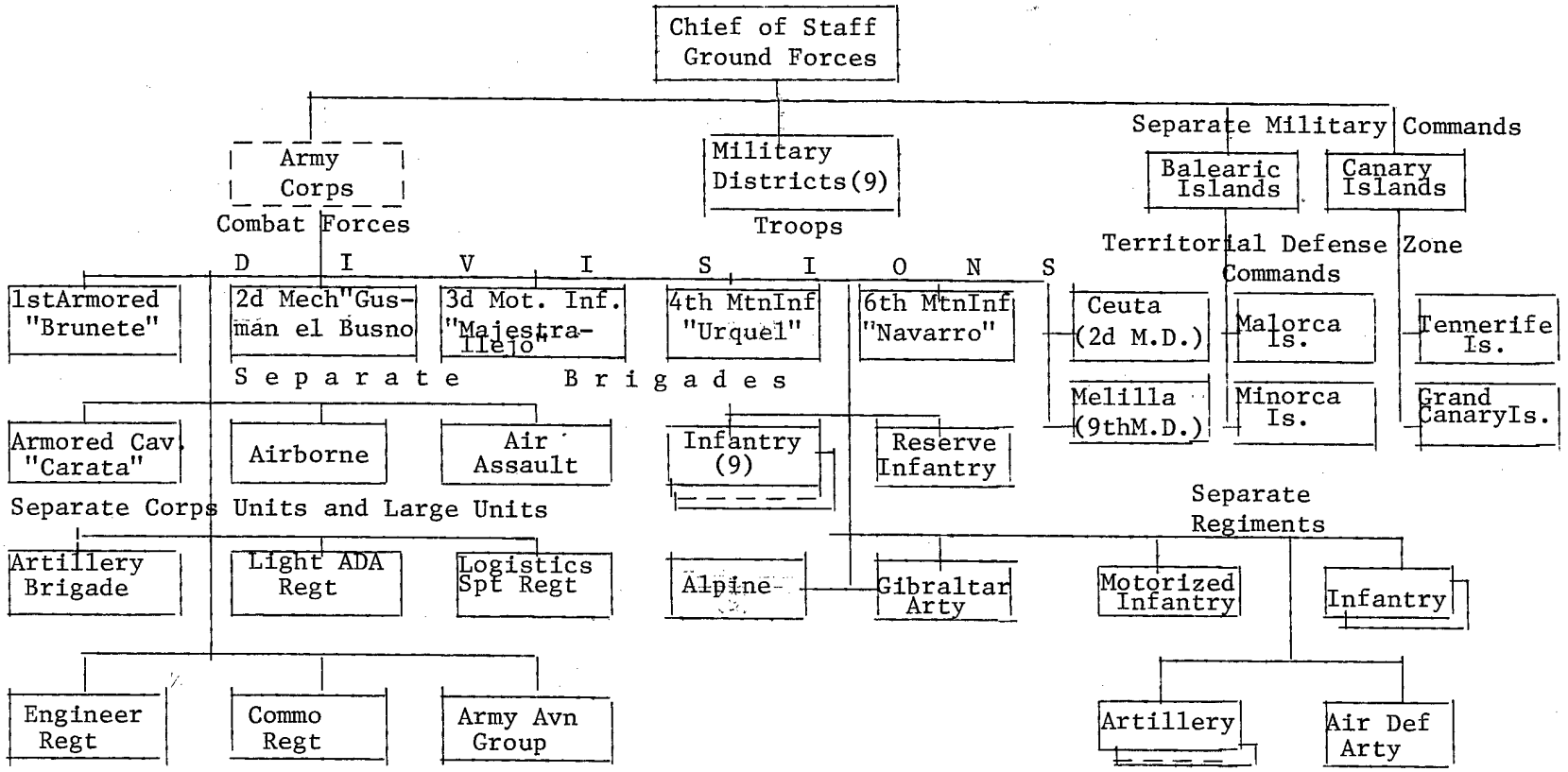
[Article by Col Yu. Yur'yev]

[Text] In May 1982, U. S. and NATO militaristic circles succeeded in drawing Spain into the aggressive North Atlantic bloc. The important strategic position of this country and its significant military and economic potential had long attracted them. In the opinion of Western specialists, Spain's participation in the bloc will expand the borders and the sphere of employment of the combined armed forces, and allow the NATO command to more efficiently implement control over sea and air lines of communication in the Atlantic Ocean and Mediterranean Sea. Moreover, foreign military specialists believe that Spain's substantial distance from the Western borders of the Warsaw Treaty Organization countries (more than 2,000 km) may provide favorable conditions for strategic deployment of troops, military equipment, and various material resources from the North American continent. Spain's territory is also expected to be used to create stores of military equipment, ammunition, petroleum, oils and lubricants, food, etc., necessary to support combat operations in the European Theater of War.

Questions about the place and role of Spanish armed forces in NATO are important in this regard. Judging by foreign press reports, the NATO command intends to use them to strengthen the southern flank of the bloc. It also has been proposed that Spain's large units, units and sub-units be further equipped with modern weapons and military equipment in order to increase their firepower and maneuverability on the field of battle.

According to the foreign military press, the ground forces are the primary and most numerous of Spain's armed services. They include combat forces and territorial defense troops (Figure 1). Their primary mission is considered to be conducting combat operations on the territory of the country (in the event of enemy attack), and beyond its borders. The chief of the General Staff of the Ground Forces, who is directly subordinate to the Committee of Chiefs of Staff, has overall control over the ground forces.

Ground forces large units and units are deployed in nine military districts, on the Balearic and Canary Islands, and in the cities of Ceuta and Melilla in Morocco, which are administratively subordinate to the headquarters of the 2d



(Figure 1). Organizational Structure of Spain's Ground Forces

and 9th Military Districts respectively. A district includes a number of provinces, each of which is headed by a military governor. The military governor of the central province is simultaneously the main inspector of the district's troops. A commander in the rank of lieutenant general is in charge of each district. He is subordinate to the Committee of Chiefs of Staff through the main headquarters of the ground forces. The 1st (Madrid), 2d (Seville) and 3d (Valencia) military districts are the largest in number of units and presence of modern weapons and equipment.

At present there are two organizations in the Spanish ground forces: administrative (peacetime) and combat (wartime and exercises).

In peacetime, ground forces large units are maintained at reduced strength. A division has three brigades (one is cadre), each of which has two regiments. A motorized infantry regiment has two motorized infantry battalions. A mixed motorized infantry regiment has a tank and a motorized infantry battalion. A mechanized regiment has a tank battalion and an armored personnel carrier mounted motorized infantry battalion. A tank regiment has two tank battalions. If necessary, each regiment can deploy one additional battalion for the cadre brigade. The wartime establishment envisions shifting to another organization: battalion -- brigade -- division.

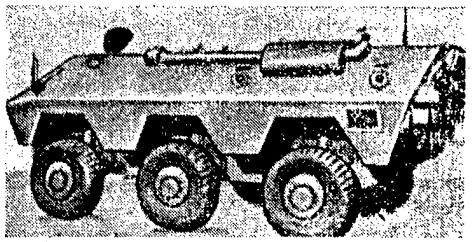
As the foreign press notes, ground forces large units and units are deployed on practically the entire territory of Spain: In the north -- a separate infantry and a separate airborne brigade; on the French border -- two mountain infantry divisions; in the south -- a motorized infantry division and separate units; in the west -- a mechanized division; in the central portion (Madrid area) -- an armored division, a separate airborne brigade and separate units.

According to the foreign press, there are currently 255,000 men in the ground forces. These include five divisions (one motorized infantry, one armored, one mechanized, and two mountain infantry); 16 separate brigades (10 infantry, 1 armored cavalry, 1 airborne, 1 air assault, 1 Alpine, and 2 artillery); more than 10 field artillery regiments; 1 separate "Improved Hawk" air defense missile battalion; and also several separate infantry and air defense regiments.

The armament of the large units, units and sub-units numbers more than 1,000 tanks, including approximately 800 medium (275 AMX-30 [Figure 2], 390 M47, 130 M48) and more than 200 light; more than 1,000 field artillery guns of various calibers; more than 600 M113A1 and BMR-600 armored personnel carriers (APC) (Figure 3); approximately 550 air defense artillery guns; and more than 100 army aviation helicopters of various types, including 28 BO-105 with HOT antitank guided missiles [ATGM]. There are Milan and Cobra ATGM launchers, SS-11, PC30 rocket launcher systems, mortars, recoilless guns, and Improved Hawk and Nike-Hercules air defense missile systems.

COMBAT FORCES are the main component of Spain's ground forces. They include the principle large units and separate units, and also support and service units. Per the peacetime establishment they are 75-80 percent filled out with personnel and 85-100 percent with weapons and military equipment. According to

(Figure 2). AMX-30 Medium Tank

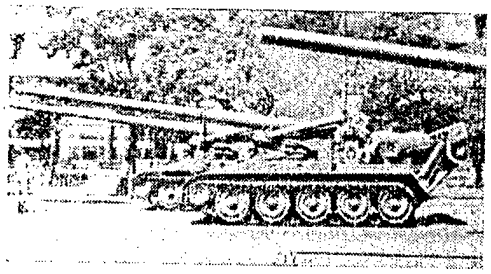


(Figure 3). BMR-600 Armored Personnel Carrier

the Western press, the combat forces will be combined into a single army corps should an emergency or war arise.

According to foreign press data the combat forces include the following large units and units:

The First Armored Division, "Brunete" (headquarters in Madrid) includes the 12th (El Goloso) and 13th (cadre) tank and the 11th Mechanized (Campamento) brigades, artillery, armored cavalry, and engineer regiments, and other units and sub-units. The division has a total of approximately 300 AMX-30 medium tanks, 12 M107 175 mm self-propelled guns (Figure 4), 4 towed 203.2 mm howitzers, 18 M109A1 155 mm self-propelled howitzers, 2 381 mm PC30 (Figure 5), 32 40 MM air defense guns, more than 300 APC's and other armament.



(Figure 4). M107 175 mm Self-Propelled Guns

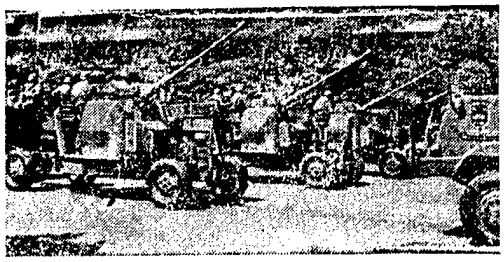
(Figure 5). 381 mm Volley Fire Rocket Systems

The 2d Mechanized Division, "Gusman el Bueno," (headquarters in Seville) includes the 21st Mechanized (Badajos), 22d motorized infantry (Queris-de-la-Frontera) and 23d (cadre) mechanized brigades. The other units and sub-units are the same as those in the armored division. Its armament includes 162 M47 and M48 medium tanks and more than 50 M41 light tanks, 24 155 mm self-propelled and towed howitzers, etc.

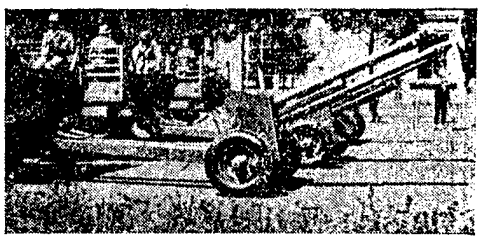
The 3d Motorized Infantry Division, "Majestrallejo," (headquarters in Valencia) includes the 31st (Castellon-de-la-Plana), the 32d (Cartacna) and the 33d (cadre) motorized infantry brigades. The other units and sub-units are similar to the units and sub-units of the armored and mechanized divisions. The division has 162 M47 medium tanks and more than 50 M41 light tanks.

The Spanish command considers a brigade to be a tactical formation which is able to conduct combat operations both as part of a division and independently. According to the wartime establishment, each brigade is to have three or four combat battalions, an artillery battalion, a rear services battalion and other sub-units. It is planned that the armament of a tank brigade (two tank and one motorized infantry batalions) will have 108 AMX-30 medium tanks, 18 105 mm M108 howitzers and 51 M113A1 APC's. A motorized infantry brigade (three motorized infantry and one tank battalions) is to have 54 M47 and M48 medium tanks, 15 M41 light tanks, approximately 40 M113A1 APC's 18 105 mm howitzers and more than 500 trucks and other armament.

Spain's military press notes that the ground forces contain separate units intended to support the combat operations of the army corps formed during time of emergency. These include the "Carata" separate armored brigade with headquarters in Salamanca (one light armored cavalry and three armored cavalry regiments), containing 52 M41 light tanks, 102 M48 howitzers, 9 TOW ATGM launchers); a separate airborne brigade (headquarters in Alcala de Henares, containing 12 105 mm howitzers, 12 TOW ATGM launchers); a separate corps artillery brigade (deployed in northern Castilla, containing field and rocket artillery regiments); a corps air defense artillery regiment (headquarters in Valladolid, containing 40 mm air defense guns) (Figure 6); and other units.



(Figure 6). 40 mm Air Defense Gun



(Figure 7). 105 mm Towed Howitzer

TERRITORIAL DEFENSE FORCES are designed to conduct combat operations in coordination with combat forces, primarily within the territorial boundaries of the country, to protect and defend important military objectives and installations, and fight against naval and air assaults and enemy reconnaissance and sabotage groups.

According to the Spanish press, territorial defense forces include large units, units and sub-units at 50-60 percent personnel strength and having 70-80 percent of their weapons and combat equipment.

The mountain infantry division is the main territorial forces large unit. There are two such divisions: The 4th, "Urquel," with headquarters in Barcelona, and the 6th, "Navarra," with headquarters in Pamlona. Each division includes two mountain infantry brigades (one cadre); an armored cavalry and an artillery regiment (containing respectively M48 medium tanks and 105 mm mountain howitzers); a light air defense artillery battalion; a composite engineer regiment; a mountain ski company; and other sub-units. The mountain infantry brigade has two mountain infantry regiments (each of three battalions) and a battalion of pack artillery (12 mountain 105 mm howitzers, transported on mules). The separate Alpine brigade includes two Alpine regiments (of three battalions), a field artillery regiment (105 mm mountain howitzers), and supply and service sub-units.

The territorial defense forces also include one artillery and ten separate infantry brigades (one reserve). The latter is maintained at reduced strength in peacetime, and has two infantry regiments, each with a single battalion (each battalion contains 768 men, 8 M40 106 mm recoilless guns, 33 88.9 mm anti-tank grenade launchers, 18 mortars, 20 7.62 mm machineguns, and approximately 80 trucks); an artillery regiment containing a howitzer battalion (12 towed 105 mm howitzers) (Figure 7) and a cadre artillery battalion; and a composite engineer battalion (one sapper company, one communications company). It is reported that in wartime the infantry brigade would have more than 6,500 personnel and 700 vehicles.

In addition to the mentioned large units and units, the territorial defense forces contain 20 special purpose companies (two per separate infantry brigade); three air defense regiments, one of which contains an Improved Hawk air defense missile battalion (24 launchers) and a battery of 4 Nike-Hercules launchers; 13 composite artillery regiments; and supply and service units.

Foreign military specialists believe that obsolete models of primary weapons remaining in inventory reduce the combat capabilities, striking force and firepower of large units and units. Therefore, after Spain's admission into NATO, the minister of defense developed an eight year program of armed forces modernization, covering the period 1983-1990, which provides for the combat readiness of the ground forces to approach that of the ground forces of primary bloc members. It is planned that more than $21 billion will be spent, including $9.4 billion for arms modernization and $8.2 billion for purchasing new military equipment and weapons. It provides for improving the equipping of large units and units with AMX-30 tanks and BMR-600 APC's, and for modernizing M47 and M48 tanks. Great attention will be paid to further equipping the ground

forces with modern anti-tank weapons. It is reported that in 1982 approximately 60 BO-105 helicopters from the FRG entered army aviaton sub-units, 28 of which are armed with the HOT ATGM. Ninety-six Chaparral anti-aircraft guided missile launchers have been purchased from the U. S., and their delivery to large units and units will begin in 1983.

According to the Spanish command, implementing these plans will improve the combat capabilities of the ground forces of Spain -- the 16th member of the NATO bloc.

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FOREIGN MILITARY SPECIALISTS' VIEWS ON USE OF ANTITANK HELICOPTERS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 27-31

[Article by Reserve Colonel P. Isayev: "Helicopters Against Tanks: Views of Foreign Specialists on the Use of Antitank Helicopters"]

[Text] U. S. and NATO military-political leaders, preparing for an aggressive war against the Soviet Union and the other countries of the socialist community, are taking active steps to further equip their armed forces with modern means of battlefield combat. According to the foreign military press, in recent years a significant quantity of highly effective combat equipment, including antitank helicopters [ATH], has entered the armament of NATO bloc countries' ground forces large units and units.

According to Western specialists, ATH (fire support helicopters in U. S. terminology) are designed first of all to defeat enemy tanks on the battlefield. At the same time, they are able to suppress ground fire, participate in direct air support, lay minefields on routes of tank movement, attack other helicopters, and accomplish other missions.

Military experts believe that the speed, mobility, flexibility of control, and high firepower of helicopters enables the command to rapidly react to the threat of enemy tank groupings, and inflict massive strikes on such groupings. At the same time, as NATO training exercises conducted during recent years show, ATH have some shortcomings which limit their use and reduce their combat effectiveness. Foreign specialists include among these shortcomings high vulnerability to anti-aircraft fire; limited capability to execute anti-air defense maneuver during ATGM sighting, launch and guidance to the target; dependence on weather conditions, and others.

U. S. and other NATO military journals note that the basic principles for the combat use of ATH are constant readiness to conduct massive attacks on enemy tanks on the battlefield; skillful combination of fire and maneuver; flexibility and sudden action; concentration of the main efforts on the decisive sector at the critical moment; maximum use of terrain for cover and concealment; and precise coordination of ATH with reconnaissance helicopters, tactical aviation aircraft, air defense resources, and sub-units and units of other branches of arms and service elements.

According to the foreign press, helicopters of the following types are currently in NATO ground forces: AH11Q and AH-1S Huey Cobra (U. S.); PAH-1 (BO-105P, FRG), SA342M Gazelle (France); WG.13 Lynx (UK); and A.109 Khirundo (Italy). They are equipped with various anti-tank guided missiles [ATGM] (TOW, HOT, AS-11)*, which can defeat tanks at considerable distances. In addition, it is expected that new helicopters will enter the inventories beginning in the mid-1980's. These include the U. S. AH-64 Apache (16 Hellfire ATGM, 30 mm cannon with 1,200 rounds of ammunition, armored cabin and most important assemblies), the Franco-German PAH-2 (similar to the AH-64 in configuration, having up to 8 ATGM and a 20 mm or 30 mm cannon), the British modified WG.13 Lynx (armored cabin, 8-10 TOW ATGM). Italy is also developing an anti-tank helicopter, the A.129 Mangusta, which is to be equipped with eight TOW ATGM or (in the future) with the U. S. Hellfire.

The armies of the leading NATO countries have created units and sub-units of ATH for effective anti-tank warfare. Thus, army aviation battalions have been formed (21-42 ATH each) in U. S. infantry, mechanized and armored divisions. A separate ATH brigade (135 craft), which can be attached to the army corps, has also been formed. The American press has reported that a brigade of army aviation (including 2 battalions with 25 ATH each) is to be formed in the future division.

Bundeswehr army corps each have a regiment of ATH (56 PAH-1 each). Army aviation regiments (24 helicopters; 12 with ATGM) have been created in the armored divisions of the 1st Army Corps of the UK Army on the Rhine deployed to the FRG. Corps level army aviation regiments, each of which contains nine varied squadrons, three of ATH (fire support helicopters), comprise the main French ground forces army aviation elements. Altogether, a regiment has 30 SA342M Gazelle ATH with HOT ATGM, or Alouette-2 ATH with AS-11 ATGM.

As the foreign press emphasizes, the existence of specialized anti-tank units and sub-units in the structure of the ground forces of the main NATO countries permits the corresponding commanders to create highly mobile anti-tank reserves, which they can quickly put in action to defeat enemy tank groupings.

Owing to the growing capabilities of these anti-tank resources, the NATO armies are presently conducting research to determine the most effective methods of using ATH on the battlefield. For example, U. S. military specialists believe that to be effective in battle against large masses of tanks they should be used in helicopter battalion (company) strength. This makes it possible for each ATH sub-unit to place in battle one company (platoon) in turn, until the mission is completely accomplished. This employment method preserves the principle of "one-third," the essence of which is as follows: one sub-unit attacks the tanks; a second is on the strike route, either before or after a strike; the third is located at the forward ammunition and fuel replenishment point. They believe that in this way constant fire on the enemy is maintained. According to the views of military specialists in other NATO countries, ATH should be used in flights, squadrons and regiments. Operations of small groups

*For more detail see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1983, p 35-43 (Ed.).

(two or three craft) against a single target are considered inefficient. In some cases (depending on the situation) it is recommended that combat helicopter groups or mixed groups of fixed wing aircraft and helicopters be formed for the period of anti-tank battle. The foreign press has reported that the former may include up to six or eight anti-tank and three to four reconnaissance helicopters, and the latter four fixed-wing aircraft, five ATH and four reconnaissance helicopters.

Helicopter groups may operate either by making consecutive strikes against the targets, observing the principle of "one-third," or by making simultaneous strikes by several groups (in FRG ground forces this is described as echeloned and simultaneous employment of helicopters). The first method is recommended when it is necessary to ensure the conduct of continuous anti-tank fire; the second when it is necessary to inflict a massive strike against major enemy groupings in a minimum period of time.

Western military specialists assign an important role to combined operations of tactical aviation (especially attack aircraft) and anti-tank and reconnaissance helicopters. According to foreign press reports, the U. S. has worked out principles for their combat employment, which are applied in practice in exercises. It is felt, for example, that combined operations of AH-1S ATH and A-10 attack aircraft increase several-fold the capability to defeat enemy tanks,* and at the same time greatly reduce casualties to their own aviation resources.

Great importance is placed on improving tactics and operational methods of ATH in battle against enemy tanks. It is recommended that flights be conducted at low and maximally low altitudes with contour flying in order to reduce casualties from enemy air defense and preserve surprise. The first type of flight is determined ahead of time and is accomplished, as a rule, in a direct line, observing constant speed and altitude. It is most suitable for flights over long distances where there is no enemy opposition. The second permits using terrain relief to cover and conceal the actions of helicopters and prevent their radar observation. The flight speed in this regime is constant, but the altitude may change depending on obstacles encountered. It is believed that by flying at maximally low altitude it is possible to enter the target area suddenly, without being detected, carry out a strike, and secretly get out from under enemy fire. This is recommended for operations in direct contact with the enemy.

The foreign press reports that when preparing to conduct strikes against enemy tanks, and for moving to the target area, ATH sub-units are designated concentration areas, waiting areas and combat positions.

The concentration area is the place where helicopters are assembled in preparation for conducting forthcoming combat operations. Here the situation is evaluated, combat orders are given, maintenance and repair of helicopter equipment is accomplished, and some reserve supplies are received. In the waiting

*More detail on coordination between army aviation helicopters and A-10 aircraft is found in ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1982, No 6, pp 30-33.

area, which it is recommended be selected between concentration areas and helicopter combat positions, the sub-unit is usually located for a short time, until reconnaissance helicopters complete reconnaissance of the routes for the flight of the ATH to their combat positions. The combat positions are shelters or camouflaged locations (for example, terrain folds, the space between tree-tops, etc.), which are occupied by ATH for striking enemy armored targets. They are selected according to the criteria that they provide for the conduct of effective fire from maximum ranges, and concealed flight to the other combat positions (usually after the second launch of an ATGM).

According to foreign specialists, special attention should be paid to supporting the combat operations of ATH units and sub-units. It is planned that corps and division resources will accomplish this support. Field artillery is designated mainly to suppress enemy air defense; air defense artillery and air defense missile systems to provide anti-aircraft cover for ATH; and tactical aviation aircraft to destroy enemy ground air defense assets and aerial targets. Active and passive air defense radar interference and other means are also planned.

As the foreign military press reports, the use of ATH units and sub-units is planned in all types of combat operations. It is emphasized that in the offensive their mission will be to battle against enemy tanks on that large unit's main axis of combat operations on which concentration of the defender's main tank grouping is possible. Stemming from this, the U. S. Army command believes that TOE and attached resources of mechanized (armored) divisions should be used mainly for battle against tanks on the forward edge and in the depth of the enemy defense.

It is envisioned that the ATH brigade, attached for a period of battle to an army corps, should be used together as a rule, to concentrate firepower in battle against a major tank grouping while a friendly counterattack (counter-strike) is being conducted. In some instances a battalion or company from the ATH brigade may be attached to the first echelon division which is operating on the axis of the corps main strike.

In the opinion of Bundeswehr specialists, a motorized infantry (tank) division, operating on the axis of the main strike, may be reinforced for the period of battle by a squadron from the corps ATH regiment. This squadron is either the division commander's reserve, or may be used in flights to reinforce first echelon brigades. Using the entire ATH regiment in support of the army corps is also proposed, for battle against large masses of tanks on the main axis.

According to foreign press reports, British armored divisions will use TOE army aviation regiments. In some circumstances it is recommended that they operate together as a mobile anti-tank reserve of the division commander, and in other circumstances that their sub-units be attached to the first echelon brigades to increase their offensive capabilities.

In organizing the offensive, it is planned that ATH units (sub-units) have zones of operation designated, which must be within the boundaries of the large unit's zone of advance.

In the opinion of Western military specialists, when advancing to contact with the enemy, it is advisable to hold ATH units and sub-units in waiting areas located behind the combat formations of the first echelon attacking units, ready for immediate entry into battle. During this period, reconnaissance helicopters conduct reconnaissance of enemy targets. During the course of the attack, ATH sub-units attack enemy tanks located on the forward edge and in the depth of his defense.

It is contemplated that with the penetration of the forward edge and during the battle in the depth of the defense, ATH units will conduct strikes against counterattacking enemy tanks, with the aim of breaking up the counterattack and inflicting maximum casualties. During enemy withdrawal they may conduct massed strikes, first of all against his withdrawing tank sub-units, and also against columns of self-propelled artillery, control points, rear services organs, etc.

U. S. military specialists emphasize that in the defense it is planned that ATH sub-units assigned and attached to mechanized (armored) divisions will be used for combat against enemy tanks located on approaches to the forward edge, on lines of deployment into battle formation, and in concentration areas for regrouping of forces. For example, when fighting in the security zone it is recommended that ATH be used to support operations of combined arms units and sub-units serving as the division (corps) covering force. In some instances they may be tasked to conduct independent combat operations in the security zone, in order to conduct mass strikes against the enemy. It is recommended that combat positions for helicopters be selected in the deployment areas of covering force sub-units, or, if terrain conditions do not permit, near the forward edge of the battle area, on the axis of the most probable movement of enemy tank columns.

In the battle for the main battle area, the primary efforts of ATH sub-units should be directed at destroying penetrating enemy tanks, and conducting mass strikes against second echelons or reserves entering battle, with the objective of slowing the pace of the offensive.

Western military specialists believe that the widespread use of ATH in all types of battle, and the variety of methods of using them in support of ground forces large units and units, enhances the forces' capability in battle against enemy armored targets.

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ENGINEER MEANS OF FRANCE'S GROUND FORCES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 31-35

[Article by Engineer Colonel G. Aleshin, Lt Col D. Kozlov: "Engineer Means of France's Ground Forces"]

[Text] Engineer forces have a significant place in the structure of France's ground forces. This corresponds to the view of French military specialists, who believe that the combat capabilities of units and large units can be fully realized only with the necessary engineer support. The main missions of this branch of arms are to achieve high mobility and reduce the casualties of the ground forces, including under conditions of nuclear weapons use, and to limit the enemy's maneuver.

As the foreign press notes, considerable attention is being given to improving the capabilities of French army engineer units and sub-units. Thus, in the latter 1970's the engineer forces began to implement a transformation, which was later carried out in the course of a fundamental reorganization of the entire army. Among the most significant measures are: developing new engineer units and sub-units for combined arms formations; improving the organizational structure of engineer units and sub-units with the aim of reducing their personnel; introducing new, more modern engineer equipment; and redistributing tasks between divisional and corps engineer units, to give the division more autonomy, especially in overcoming wide water obstacles.

Engineer units found in ground forces formations are distinct in composition, engineer equipment and the nature of their missions. Engineer regiments of army corps (two per corps) are intended to reinforce the divisions operating on the main axes. Heavy engineer vehicles and crossing equipment found in these units supplement the standard equipment of divisional subordinate engineer units, which, in the opinion of French military specialists, increases the flexibility of engineer support. Each armored and airborne division has an engineer regiment, and infantry divisions have an engineer company. The foreign press notes that there is a wide variety of French ground forces engineer equipment, both narrowly specialized and standardized to various degrees.

RESOURCES FOR CONSTRUCTING AND OVERCOMING MINEFIELDS. In the opinion of French military specialists, the use of minefields is one of the methods of limiting

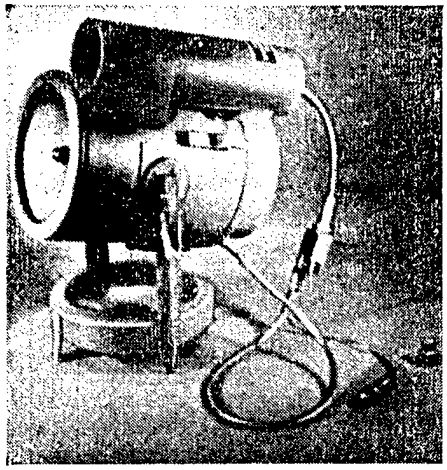
enemy maneuver. Their effectiveness is significantly increased if they are used together with fortifications. Engineer forces have several models of anti-tank and anti-personnel mines.

The HPD anti-tank mine (weight 5 kg; explosive 2 kg) has a plastic casing and a directional charge with a magnetic proximity fuse. It is emplaced in the earth by a minelayer, or is set on the surface. When it explodes it can penetrate the hull floor of a tank up to 70 mm in thickness. At present a modification is being developed, designated the HPD-1A, which, according to the Western press, penetrates up to 250 mm of armor when set on the surface.

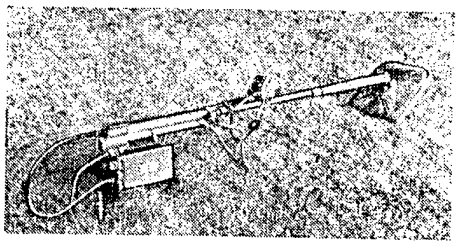
The MAH Model F1 anti side-armor mine has an electro-mechanical fuse fastened to a narrow wire. When the wire is broken a directional explosion occurs. The hollow-charge core which is formed can defeat armored vehicles at up to 80 meters distance. Recently an infra-red sensor placed on the top of the mine (Figure 1) has been used for fuse action.

The Model 1952 anti-track mine (9 kg explosive) is equipped with a mechanical pin detonator, and can be used as an anti-bottom mine.

French anti-personnel mines are of various types: fragmentation, high explosive, and directional. In particular, an Mk61 or Mk63 circular destruction fragmentation mine contains more than 200 prepared fragments, which defeat personnel in a radius of up to 10 meters. The MAPED Model F1 directional mine has a prismatic plastic case which contains a charge of plastic explosive and 500 prepared steel fragments which scatter on explosion in a 60 degree sector to a distance of up to 40 meters. Towed and self-propelled minelayers are used



(Figure 1). MAH Model F1 Anti-Side Armor Mine With Infrared Detector



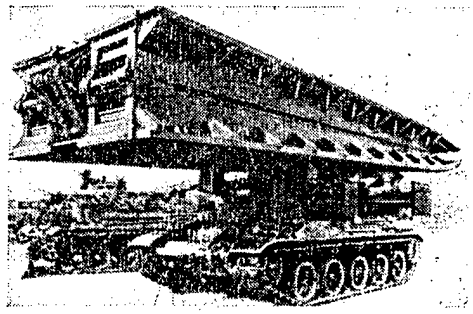
(Figure 2). F1 Portable Mine Detector

for mechanized delivery of HPD anti-tank mines. The self-propelled model constructed on a truck base is better perfected. This mine layer digs separate holes, rather than a continuous furrow to emplace mines in the earth. In the opinion of foreign specialists, this makes it more difficult for the enemy to detect mined sectors. It can emplace approximately 400 mines per hour. The operating mechanism has hydraulic drive, and its cargo compartment carries 476 HPD mines. As the French military press notes, further improvements to mining systems will be toward creating small anti-tank mines and delivering them remotely by cannister munitions using rocket systems salvo fire.

Model F1 portable induction mine detectors (Figure 2) are used for minefield reconnaissance. This apparatus weighs approximately 3.5 kg; it has a depth of detection of anti-tank mines of 50 cm, and a length of continuous operation up to 30 hours without replacing the power source.

According to the Western press, the MDR mine clearing flail, based on the AMX-30 tank (being developed jointly with the FRG) is to enter engineer regiment support companies in armored divisions in the latter 1980's. It is designed to make gaps in mine fields. The working component of this flail is a frame suspended from a tracked chassis, on which is mounted a rapidly rotating roller with flails fastened to it by cables. A hydraulic system controls the position of the frame. The maximum sweeping depth may reach 20 cm. When operating, dirt and unearthed mines are thrown forward and to the side of the moving vehicle. Reportedly, in 15 minutes the MDR minesweeper can make a passage in an anti-tank minefield 4.7 meters wide and 200 meters in depth. In addition to the main engine (720 horsepower) there is an auxilliary with 300 horsepower. Most of the total power is used to drive the operating mechanism. The West German model will use the Leopard 1 tank chassis.

GAP CROSSING RESOURCES include a large number of models. Judging by foreign press reports they are constantly being improved. Primary attention is devoted to reducing time required for deployment and the number of personnel. A tank bridgelayer constructed on the base of an AMX-30 tank (Figure 3) is used by



(Figure 3). French Tank Bridgelayer

first echelon combat and transport vehicles to cross small water obstacles and gullies of up to 20 meters. It has a folding bridge structure, made from light

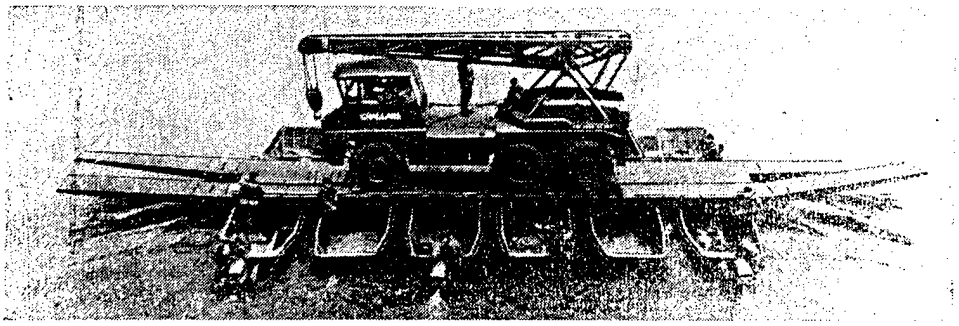
alloys. It is 22 meters long, 3.9 meters wide, and has a load carrying class of 50. The bridge is laid over the obstacle in 8 - 10 minutes. The laying mechanism is hydraulic. The maximum speed of the bridgelayer is 50 km per hour; its range is 600 km.

Engineer forces also have in inventory a small number of bridgelayers built on the tracked chassis of the French AMX-13 light tank, with which vehicles weighing no more than 25 tons can cross obstacles up to 12 meters in width.

By the beginning of the 1980's, engineer regiments of army corps and armored divisions had received more than 50 self-propelled, mechanized PAA bridges, primarily used by second echelon forces to cross obstacles up to 20 meters in width. The weight of the wheeled base vehicle is 23 tons. It has a maximum road speed of 60 km per hour and a range of 800 km. The bridge structure includes a 22 meter long truss, consisting of two attached hinged portions and a rear ramp. The truck body may be used as an element of the bridge (the wheels are removed). Thus, to overcome obstacles up to 40 meters in width, two vehicles are deployed, one of which may serve as an intermediate support. The bridge structure has hydraulic gears. A single span bridge requires approximately 10 minutes to emplace.

The French Army uses inflatable "Commando" and "Zodiac" assault boats to force water obstacles. The former is produced in five variants of differing load capacities (500 - 2,000 kg). The boats are equipped with 25 - 40 horsepower outboard motors. Some have mounted 60 mm mortars (breech loaded) or 7.62 mm machine guns.

The Model 1949 light footbridge was improved in 1962. It consists of floating supports (inflatable boats), upper structural sections (decking), braces and cables. A bridge 100 m in length can be assembled if the river current is less than 1.5 m per hour.



(Figure 4). MLF Light Ferry Boat

The MLF light ferry boat (Figure 4), which entered the engineer forces inventory in 1976, is used to ferry light wheeled and tracked vehicles across water

obstacles. The equipment set includes open half-pontoons, upper structural track sections, and ramps and panels between the tracks which are used to assemble the ferries and floating bridges. The ferry employs outboard motors to move in the water.

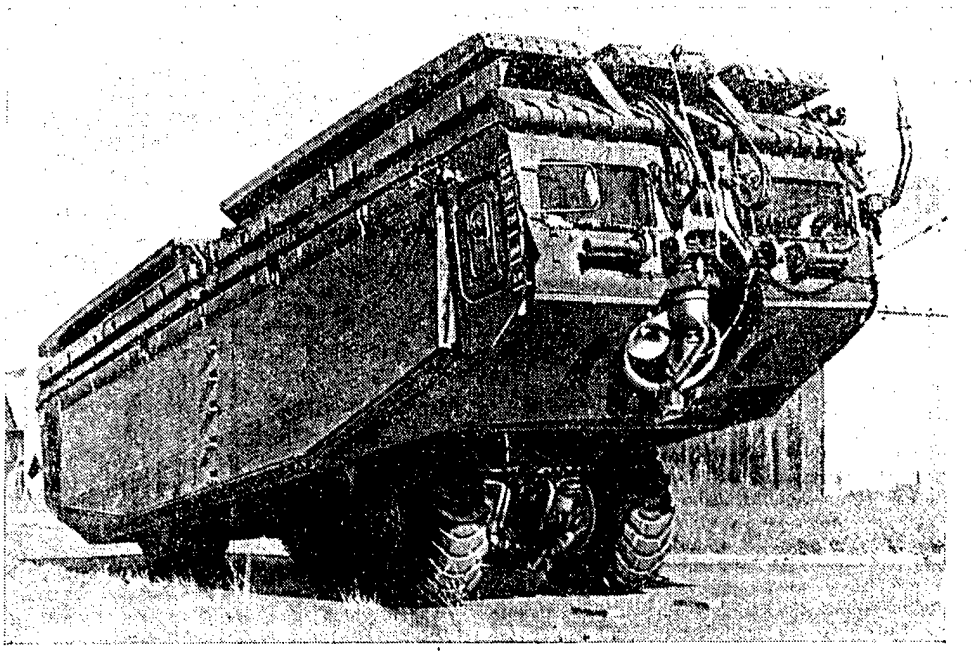
The foreign press notes that significant future changes are to take place in equipping French engineer troops with water obstacle crossing means. The TA1 mechanized pontoon park is replacing American M4T6 and Class 60 parks, which already do not satisfy modern requirements, mainly due to the long time required for laying and the need to have a large crew for servicing. It is believed that the TA1 reduces these shortcomings. Laying a 100 m long Class 50 floating bridge using this park is accomplished by a team of 45 men in one hour. A three pontoon ferry of this carrying capacity class is assembled by a team of 15 men in about 40 minutes. The park includes a complement of pontoons and decking, hauled by a prime mover built on a high mobility base. The base vehicle has special equipment to lower the pontoons into the water and load them when the park is packed. Moving the pontoons in the water is accomplished using Model F1 bridge erection boats or outboard motors. The vehicle's road speed reaches 60 km per hour.

"Zhillua" self-propelled crossing resources are found in engineer regiments of Army corps and divisions, and in the Rhine water obstacle crossing regiment. Each set consists of 12 bridge and six floating ramp vehicles equipped with additional inflatable floats.

The set is based on common floating vehicles, which differ only in their upper structures. With this set it is possible to assemble a floating bridge 112 meters in length, or transportation ferries. In the opinion of French military specialists, at present the self-propelled "Zhillua" park does not completely satisfy modern requirements, since the load-carrying capacity of the individual vehicles is insufficient, it is difficult for crossing combat vehicles to get off of the ferry, and the length of the bridge truss is limited. Therefore, according to Western press information the MAF self-propelled pontoon park will begin to replace it in the mid-1980's. From this set it will be possible to assemble Class 60 ferries, and an individual vehicle will be able to serve as a floating support for a floating bridge of the same class. One park set of four vehicles will be able to assemble a floating bridge 108 m in length.

The wheeled (4 x 4) pontoon bridge and ferry vehicle (Figure 5) has a hermetically sealed body. Its upper structure includes folding, two-section ramps. Inflatable floats are affixed to the vehicle's sides and to the sides of the center ramp sections to increase reserve bouyancy. Its overall length in ferry configuration is 36 meters. The dimensions of the cargo platform are 12 x 4 meters. The length of the vehicles, when deployed for use as shore or river bridge sections, is 30 and 24 meters respectively. The wheels are retracted into a recess when in floating position. Approximately five minutes are required to deploy the MAF as a ferry or a floating bridge support. Movement in the water is accomplished with the help of two screw propellors, with which the speed of a loaded ferry reaches 9 km per hour. When fully fueled the vehicle can work at a crossing constantly for 12 hours. Its weight is 40 tons

in travel position. Its average road speed is 40 km per hour, and its range is more than 600 km.



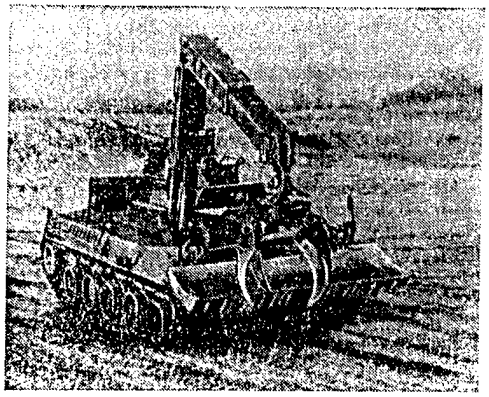
(Figure 5). Ferry and Bridge Vehicle of the MAF Self-Propelled Pontoon Park

In the assessment of French specialists, the adoption of the MAF self-propelled pontoon park will lead to a reduction in the overall amount of crossing equipment. Thus, 120 of these vehicles will replace approximately 250 vehicles from the "Zhillua" self-propelled park.

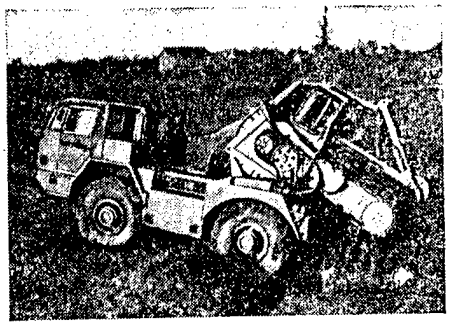
ENGINEER VEHICLES are designed primarily to accomplish the missions of crossing barriers and unmined obstacles, trail blazing, preparing crossing sites, and preparing troop position fortifications.

At present the VCG engineer vehicle and the obsolete American M47 tank with suspended bulldozer equipment are the main resources of an armored division for overcoming barriers and unmined obstacles and conducting earth moving and excavation in the zone of combat operations. The VCG vehicle, developed on the base of the AMXVTT M56 tracked armored personnel carrier, has been in the armament of French engineer forces since 1966. It has bulldozer equipment, a crane boom and a traction winch. In addition to the crew it carries a sapper squad of seven men and their engineer equipment. Its main armament is the 12.7 mm machinegun.

According to the foreign press, both of the above named models are to be replaced in the mid-1980's with the new, more modern EBG armored engineer vehicle (Figure 6) built on the AMX tank base. It is equipped with a bulldozer blade with teeth for earth loosening, a removable mine plow, a winch with up to 20 tons of traction (80 meter cable length), a crane boom (with grapple), and an assembly for remote mining, consisting of five 142 mm runners (five mines each). The combat weight of the vehicle is 36 tons, it has a three man crew, its maximum road movement is 65 km per hour, and it is armed with a 7.62 mm machinegun. Its bulldozer equipment is able to dig and move earth at a rate of approximately 100 cubic meters per hour.



(Figure 6). EBG Armored Engineer Vehicle



(Figure 7). NX7 B3 Trenching Vehicle

The NX7 B3 (Figure 7) and MkF1 trenching vehicles are used for mechanical trenching in fortifying positions and troop deployment areas. They operate at up to 250 cubic meters per hour. A multi-bucket operating mechanism is mounted on the rear of a wheeled (4 x 4) chassis. The trench depth is 1.9 m, and its width is 0.6 m.

Earth moving work is also carried out using Poklen 75CL and 75P single bucket excavators, built on a tracked and a wheeled base respectively.

In addition to the equipment enumerated above, engineer forces are equipped with road-building and load lifting vehicles, drilling rigs, camouflage gear, and various prefabricated and sectional shelters. On the whole, in the opinion of French military specialists, engineer forces and equipment are capable of supporting combat operations of ground forces large units and units under modern conditions.

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NEW WEST GERMAN RIFLE DESCRIBED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 35-37

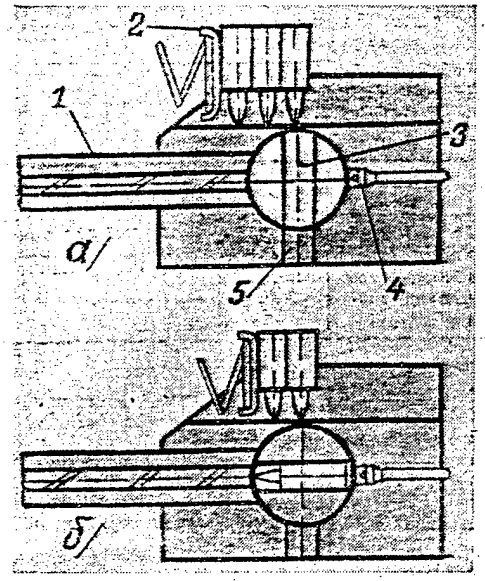
[Article by Engr Col O. Surov: "New West German Rifle"]

[Text] Since 1971 the firm Hekler and Cox has been developing the G11 4.7 mm automatic rifle (Figure 1), which fires caseless cartridges, on order of the Bundeswehr. As foreign specialists note, the main advantages of this rifle are small size and weight, increased accuracy and grouping capability during automatic fire, sufficiently high reliability of the automatic mechanism under severe conditions, simplicity in servicing and use, and high magazine capacity (50 cartridges).

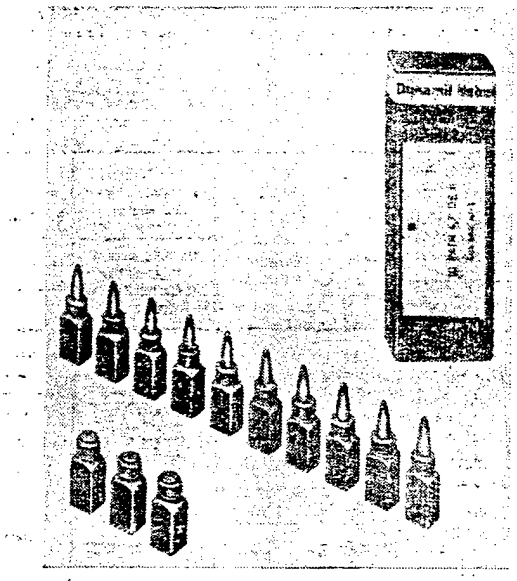
(Figure 1). 4.7 mm G11 Automatic Rifle Prototype

According to the foreign press, the use of caseless cartridges has the following advantages: simplified rifle design, since the problem of extracting and discarding the empty case from the cartridge is eliminated; reduced weight and size of both the cartridge and the weapon; and less expensive cartridges; since scarce brass is no longer used in their manufacture.

The main design features of the G11 rifle are a completely closed breech, which substantially increases the reliability of sub-assemblies and mechanisms under unfavorable combat conditions, and, most importantly, a drum with a cylindrical chamber, which rotates in a vertical plane, passing through the axis of the bore. This original design decision permitted using caseless cartridges, which changes the traditional method of loading. Now this takes place by turning a handle which is located on the left side of the breech. When this is done the hammer goes into the sear notch, the drum chamber occupies the loading position (Figure 2a), and the next cartridge is rammed from the magazine into the chamber, simultaneously expelling residual gases through the ejection opening in the lower part of the breech. Under the influence of a spring, the chamber turns 90 degrees and is set in firing position (Figure 2b). The firing pin, located in the rear of the breech, also serves as an obturator.



(Figure 2). Operating principle and loading mechanism illustration: a. before loading; b. prepared for firing (1--barrel; 2--feed lever with magazine spring; 3--chamber; 4--firing pin with hammer; 5--ejection hole).



(Figure 3). Caseless cartridges for G11 4.7 mm rifle (in foreground -- 3 loose cartridges; in background -- a magazine for 10 cartridges.

The rifle's automatic mechanism is based on the principle of barrel recoil. The firing mechanism permits semi-automatic and automatic fire, and also firing in bursts of three shots. In the latter instance, all three cartridges are fired during a single movement cycle of the mobile parts of the rifle (barrel, drum chamber and striking mechanism). This ensures a high rate of fire and good grouping capability, which is also achieved during automatic fire, due to the small recoil resulting from the presence of a buffer and the large number of moving parts. According to the foreign press, when a burst of three shots is fired at 300 meters, all hit in a 30-45 cm circle.

The G11 caseless cartridges (Figure 3) used by the rifle were developed by the Dinamit Nobel firm. The cartridge consists of a bullet, powder charge, anvil, and primer. The powder charge is made from powder with higher ignition temperature (100 degrees centigrade higher than gun cotton powder). It is made in the form of a 21 mm high parallelepiped having a square cross-section (9 mm on a side). A lacquered coating is applied to it to increase the mechanical strength of the charge. According to the foreign press, the caseless cartridge bullet has sufficiently high penetration capability. It is noted that in firing at a distance of 300 m, it penetrates a 6 mm steel plate or 50 mm of concrete, and at a distance of 600 m it penetrates a West German steel helmet.

The cartridges are fed from a box-shaped magazine located above the gun barrel. It has a device permitting control over the expenditure of ammunition during firing; i.e., it determines the number of cartridges remaining in the magazine. For ease and speed in loading the magazine, cartridges are housed in special holders of 10 and 25.

The rifle is equipped with a fixed optical sight (1 power magnification; 200,000 mils field of view) with cross hairs illuminated at night. The light source is turned on by pushing a button, and turns off automatically (after two minutes). The sight body is used as a grip when carrying the weapon.

The basic characteristics of the G11 rifle are: length 750 mm; weight without magazine 3.6 kg, with two loaded magazines 4.26 kg; cartridge weight 5 grams, bullet 3.4 grams; initial bullet velocity 930 m/sec; rate of automatic fire 600 shots/minute; rate of fire when firing bursts of three 2,000 shots/minute; range of aimed fire 300 m; barrel life 12,000 shots; temperature range in combat use -40 to +54 degrees C.

The first lot of prototypes, consisting of 30 rifles and 360,000 caseless cartridges, was manufactured by Hekler and Cox in 1977. They were used to conduct thorough factory engineering and firing tests. The G11 rifle was also represented at competitive tests of small caliber infantry weapons which the NATO countries conducted in the late 1970's. Presently approximately 70 prototypes exist.

Hekler and Cox is currently continuing engineering tests and improving the design of the rifle. In particular, according to the foreign press, specialists are working on reducing its weight (the planned weight of the weapon with two loaded magazines is approximately 3.6 kg), and also on simplifying its design and reducing the overall number of parts from 140 to 100 (the first prototypes had a weight of 5.7 kg and had 341 parts).

According to West German specialists, completing the G11 rifle and its engineering tests may occur in 1983-1984, and troop testing in 1984-1985. It is projected to begin batch production in 1986. Initially the rate of production is to be 10,000 per month; later it will be increased to 20,000. The rough cost estimate of a single rifle is approximately 1,000DM (FRG). It is planned to replace the 7.62 mm G3 automatic rifle and the 9 mm Uzi machine pistol

currently in the Bundeswehr inventory. Equipping the armies of other NATO countries with this rifle is also being considered.

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U. S. AIR FORCE COMMAND IN ALASKA

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 39-44

[Article by Col V. Aleksandrov]

[Text] U. S. militarists have always considered and still consider Alaska an important bridgehead for aggressive actions against the Soviet Union, and concentrate there the armed forces necessary for this contingency.

The U. S. Air Force Alaskan Air Command is one of the main U. S. Air Force commands. It is a major tactical aviation formation, directly subordinate to the U. S. Air Force chief of staff. Its area of responsibility encompasses the Alaskan peninsula and Aleutian Islands with their contingent sea and Pacific Ocean waters. Its headquarters is located at Elmendorf Air Force Base.

According to foreign press reports, in contrast to other U. S. Air Force formations, such as the Tactical Air Command (TAC), U. S. Air Forces in Europe, and U. S. Pacific Air Forces, the Alaskan command is relatively small. It is not fully deployed and is intended to conduct combat operations in its area of responsibility after receiving and deploying specified units. In peacetime the command numbers approxiately 7,400 military personnel, 1,100 civilians, and up to 50 combat and 30 auxiliary aircraft (not considering aircraft located in Alaska assigned to air sub-units from other commands). Its commander is the senior military commander for representatives of other armed forces deployed in this area.

Considering Alaska's position in relation to other U. S. territory, in particular its proximity to USSR borders, the Pentagon has given additional tasks to the Alaskan Air Command, which differ from those fulfilled by other formations of tactical aviation. Thus, in the mid-1950's, at the very height of the "cold war," it was given the functions of providing the forward air defense line in the then developed system of anti-aircraft defense. In connection with this, within the Air Force Command a network of radar posts and centers was deployed, and the Alaskan Air Defense Region of the combined U. S. and Canadian North American Aerospace Defense Command (NORAD) was formed, whose chief was the commander of U. S. Air Forces Alaska.

This air defense region (operational center located on Elmendorf Air Force Base) is divided into two sectors, northern and southern, with operational centers in Merfield and King Salmon respectively. Each center has one radar post. In addition, the region has five detection and tracking radar posts, and six detection and notification radar posts. The former, and the air defense sector operational centers, are equipped with tri-coordinate or scanning radars and radioelectronic altimeters and therefore can guide fighter-interceptors to aerial targets. The AN/FPS-93A two coordinate radar is set up on the latter posts. It has a long aerial scanning range but is not adapted to tracking.

When targets are detected, radar data about them are immediately sent to the operational center of the appropriate air defense sector, and then to the region's operational center. There this information is processed, displayed and assessed, and sent to the NORAD Command Post by satellite link. If it is decided to intercept the target, the operational center of the air defense sector, using its own means or through its subordinate detection and tracking radar posts, guides fighter-interceptors to the target. In peacetime the fighters, as a rule, are dispatched from the 21st Tactical Fighter Wing.

The U. S. Air Force Alaskan Air Command organization, development and combat training are discussed below.

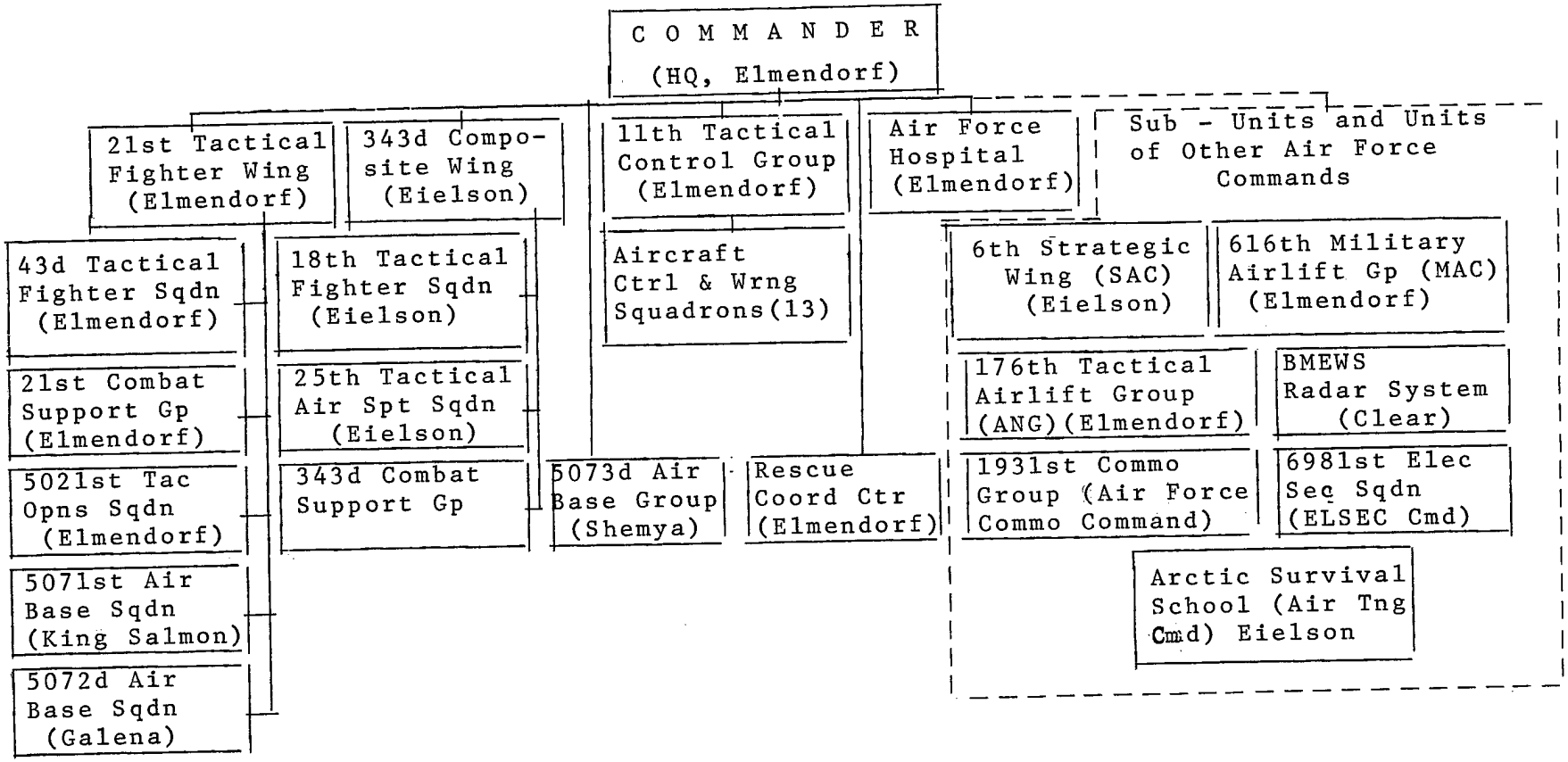
ORGANIZATION (Figure 1). According to the latest foreign press reports, the command includes: The 21st Tactical Fighter Wing (TFW) and the 343d Composite Wing (not fully manned); the 11th Tactical Control Group, the 5073d Air Base Group, a search and rescue center and a hospital. All are deployed at three main air bases (Elmendorf, Eielson and Shemya)), two forward airfields (Galena and King Salmon), and 13 forward positions (where the radar posts and air defense centers are located).

The 21st TFW (headquarters at Elmendorf Air Base), includes the 43d Tactical Fighter Squadron [TFS] (F-15 aircraft, Figure 2) and the 5021st Tactical Operations (Training) Squadron (T-33), the 21st Combat Support Group (all at Elmendorf), and the 5071st and 5072d Air Base Squadrons (at the King Salmon and Galena forward airports respectively).

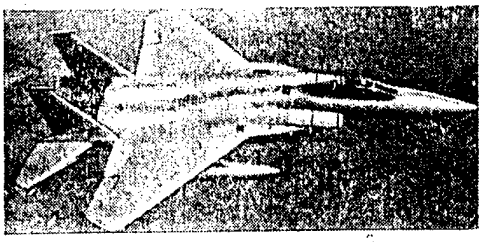
The 343d Composite Wing contains the 18th Tactical Fighter Squadron (A-10 "Thunderbolt-2" ground attack aircraft), the 25th Tactical Air Support Squadron (O-2) and the 343d Combat Support Group (all at Eielson).

Air wing commanders organize the daily military activity of all sub-units located at the air bases. Matters of ground support are the responsibility of the combat support groups found in each of these wings. Besides security of the air bases and their facilities, the groups (numbered the same as the corresponding air wing) maintain runways, taxi areas, access ways, airport stationary facilities, and working and living quarters. They are also required to carry out work to eliminate the consequences of accidents or destruction caused by military operations.

Combat units are not deployed on Shemya Air Force Base (Aleutian Islands), and on the Galena and King Salmon forward airfields during peacetime. These



(Figure 1). Organization of U. S. Air Force Alaskan Air Command (Lines joining the rectangles indicate the nature of subordination: solid lines -- direct subordination; broken lines -- coordination.



(Figure 2). F-15 "Eagle" Fighter

(Figure 3). Team City Radar Post. The radar is located on the mountain top. From its base a cable lift extends to the station.

fields are particularly used to land on-duty fighters and other aircraft. These installations are maintained in operating condition by forces of the 5073d Group (Shemya) and the 5071st and 5072d squadrons (King Salmon and Galena).

The 11th Tactical Control Group provides for the combat activity and equipment operation of the operational control centers and radar posts of the Alaskan Aerospace Defense Command Region. It numbers 13 radar squadrons. According to the Western press, the number of personnel in these sub-units is extremely limited. For example, 55 personnel, including 16 military and 39 civilian specialists are located at the Team City radar post (Figure 3).

The Rescue Coordination Center (Elmendorf) is assigned to combine and coordinate the efforts of all military services and civilian organizations in carrying out search and rescue efforts for flight crews which have suffered accidents and members of other armed services lost in snowstorms, and rendering assistance, as required, to the population.

In addition, sub-units and units of other U. S. Air Force commands are located on Alaskan territory: strategic (SAC), military transportation (MAC), communications, security and electronic warfare, and also Air National Guard.

The SAC 6th Strategic Wing (Eielson) is deployed in Alaska. It includes RC-135 reconnaissance and KC-135 tanker aircraft. The former conduct regular reconnaissance flights along the USSR border and contiguous seas. The crews of these aircraft are replaced after three years, and their service here consists of two weeks duty at Shemya Air Force Base followed by three weeks at Eielson, etc.

Because U. S. authorities consider Alaska the most suitable area for aerial refueling of aircraft flying the polar routes and to the Pacific Ocean area, KC-135 tanker aircraft are temporarily attached to the 6th Strategic Wing. They conduct aerial refueling of U. S. Air Force Tactical Air Command (TAC) aircraft in Alaska, KC-135 strategic reconnaissance aircraft of the SAC 6th Strategic Wing, and other U. S. military aircraft flying from the continental U. S. to and from the northern and western parts of the Pacific Ocean. As the foreign press notes, KC-135 operations are especially intense during periods of exercises in South Korea and Japan, when TAC, Air Force Reserve and Air National Guard tactical aviation sub-units participating in these exercises fly over Alaska.

A BMEWS [Ballistic Missile Early Warning System] radar post is located in Clear, Alaska and MAC has deployed the 616th Military Airlift Group (Elmendorf), containing one squadron (17th) equipped with C-130 "Hercules" medium transport aircraft. The 176th Air National Guard Tactical Airlift Group (Elmendorf), which is attached to MAC, is equipped with the same aircraft. In peacetime these sub-units, in addition to delivering troops and cargo for the Air Force and other military services, support the daily activities of the forward radar posts, delivering various materials and equipment to them. They also fulfill medical transport tasks as required, and participate in operations of the search and rescue services, which, as a MAC component, have a sub-unit in Alaska for this mission -- the 71st Aerospace Rescue and Recovery Squadron, equipped with HC-130 aircraft and HH-3 helicopters.

The communications command has stationed the 1931st Communications Group in Alaska. Its personnel maintain and operate communications equipment supporting the activities of all U. S. Air Force components in this area.

The Electronic Security Command has its 6981st Electronic Security Squadron (radio intercept) here, and the Air Training Command has established the so-called Arctic Survival School at Eielson. The latter trains flight crew members and Air Force ground personnel in actions under extreme arctic climate conditions.

According to Western press reports, units and sub-units not under command of the U. S. Air Force Alaskan Air Command number approximatley 3,500 personnel, and the total number of U. S. Air Force personnel in Alaska is 12,000.

DEVELOPMENT. In recent years, within the general framework of fomenting the arms race, carried out under the pretext of defending against the supposed "Soviet military threat," the U. S. military leadership has been taking steps to further increase the combat capabilities of the command. These include improving its organizational structure, improving the quality of the aircraft park, modernizing the equipment of the detection and tracking system, improving control organs, and other measures.

According to Western press accounts, many of these steps have already begun. In particular, previously the command had only one (21st) tactical fighter wing, which contained two squadrons of F-4 Phantom-2 multi-purpose tactical

fighters. In 1981, the U. S. Air Force command organized another wing headquarters (343d), transferred to it one fighter and one support squadron from the 21st TFW and began to reequip it with new type combat aircraft.

At present the 21st TFW has the all-weather F-15 tactical fighter, which U. S. military specialists consider to be significantly superior to the F-4 in maneuverability, combat operating radius, flight duration and armament. But the main advantage, in the opinion of the U. S. Air Force Alaskan Air Command, is that the F-15 has much more modern on-board radar equipment, with which it can detect targets at significantly greater distances than the F-4. This allows it to defeat enemy aircraft with air-to-air missiles from greater distances without entering into close aerial combat. The assigned 43d Tactical Fighter Squadron has 26 such aircraft, two of which are two-seaters used as trainers. In the process of training this sub-unit, T-33 aircraft from the 5021st Tactical Operations Squadron (training) serve as the enemy. U. S. Air Force experts believe that the pilots of this squadron give crews of combat aircraft the opportunity to work out methods of attack against aerial targets at long and intermediate ranges, and in close aerial combat.

The 343d Composite Wing received from the 21st TFW the 18th Tactical Fighter Squadron and the 25th Tactical Air Support Squadron. New A-10 ground attack aircraft have replaced F-4 Phantom-2 aircraft in the 18th Tactical Fighter Squadron. It contains a total of 18 A-10A combat aircraft and 2 two-seat A-10B trainers. Deployment of the wing at Eielson, which is located near the garrisons of the main forces of the U. S. Army contingent in Alaska and not far from their main training grounds, in the opinion of the U. S. command substantially eases the organization of joint operational and combat training under conditions approaching those of combat, during which the A-10 crews accomplish primarily direct air support missions. In doing this they act in accordance with the requests and orders of the commanders of Army units and sub-units, and obtain target data from forward air observers located, as a rule, on board O-2 aircraft of the 25th Tactical Air Support Squadron.

According to the Western press, another aspect of measures to develop the command concerns air defense forces and equipment, and is presently just beginning. It is planned to equip all radar posts with new tri-coordinate AN/FPS-117 radars; that is, to replace the present two coordinate AN/FPS-93 radars and AN/FPS/90 target altitude indicating radars.

U. S. military specialists believe that the entry of the new stations into the inventory of the U. S. Air Force in Alaska will significantly increase their capability to detect aerial targets and vector fighter-interceptors to them, and will also permit a substantial reduction in the number of personnel at radar posts. In particular, according to their figures, instead of the 570 personnel presently servicing 13 radar posts, after deployment of the new radars only about 100 specialists will be required. This is explained by the fact that the new stations can function automatically without duty shifts of operators, since their operation will be controlled with the aid of computers from the operational center of the air defense region. Therefore, only a minimum number of service personnel will be assigned to the radar squadrons.

As the foreign press reports, the first experimental AN/FPS-117 station has been set up in King Salmon, where it is undergoing testing. After tests are concluded it is planned to deploy 13 more such radars (12 will enter the command's radar network, and one will be located in Elmendorf and used as a training position for training service personnel). Completing the modernization of all radar posts is planned for 1984. At this same time it is planned to put into operation the new operational center of the air defense region, which is currently being built at Elmendorf Air Base. Among other functions it will undertake the automated control of the radar post network located in Alaska. According to the Western press, after it enters operation all radar posts will provide real time data directly to its situation display screen over various circuits (including satellite). In the opinion of U. S. military experts, this will significantly reduce the air defense system reaction time and substantially improve its combat capability.

In addition, it is planned to use aircraft of the E-3 Sentry DRLO [possibly Distant Radar Warning] and Control System of the 552d Airborne Warning and Control Wing (Tinker Air Force Base, Oklahoma) for air defense. The Western press indicates that, under conditions of great vulnerability of ground resources and control and communications organs associated with nuclear weapons use, this system is capable of improving command and control survivability. Solving this problem has been worked out in a number of exercises of the Alaskan Aerospace Defense Command Region. During these exercises the capabilities of the E-3 aircraft to execute missions of intercepting aerial targets flying at various altitudes were tested, as were the compatibility and linking of their on-board equipment with automatic ground control systems. Since 1982 E-3 aircraft have been periodically conducting combat air alert, operating from bases in Alaska. The Pentagon is studying the question of deploying this aircraft to the region on a permanent basis.

Thus, as the Western military press emphasizes, programs for modernizing and developing the U. S. Air Force Alaskan Air Command are already being implemented.

The foreign press notes that, under emergency conditions in Alaska, a joint task force may be created, containing forces and equipment of the Air Force command in the region and also the deployed Army 172d Infantry Brigade, U. S. Navy land-based patrol aircraft (from Adak Air Base and the Aleutian Islands), and reinforcing units and sub-units allotted according to the KHSh [expansion unknown] plans.

MILITARY TRAINING of units and sub-units of the U. S. Air Force Alaskan Air Command is aimed at maintaining their combat readiness and improving the training of pilots and ground personnel in conducting combat operations under Arctic conditions. Training is carried out in the form of daily drills and practice, and in maneuvers and exercises of various sizes, in which special attention is paid to working out tasks in operations of the U. S. Armed Forces Joint Task Force. According to the foreign press, one such measure is the exercise series "Frost" (conducted in odd numbered years: in 1979 it was called "Jack Frost;" in 1981 and 1983 -- "Brim Frost").

The primary goals of these exercises are to work out in practice the reception and deployment of reinforcing units and sub-units, form task forces, and conduct combat operations with them under cold climate conditions. Up to 12,000-17,000 personnel and approximately 100 aircraft of various types participate. In addition to forces of the U. S. Air Force Alaskan Air Command and the deployed 172d Infantry Brigade, there usually participate fighter and reconnaissance squadrons of TAC, Air National Guard and the U. S. Air Force reserve, U. S. Army reinforcing contingents (usually up to a brigade of the 9th Infantry Division and up to a battalion of the 101st Air Assault Division), and U. S. Marine Corps units (one brigade of the 1st Marine Division). Airlift of personnel, arms and supplies is accomplished by strategic (C-5A, C-141) and tactical (C-130) military transport from MAC.

In addition to major comprehensive exercises, the U. S. Air Force Alaskan Air Command periodically conducts relatively small tactical pilot training exercises, during which specific elements of assigned missions are worked out, such as the actions of the crews of military transport aircraft in airlifting tactical airborne assault landing forces. Thus, in August 1982, during exercise "Condor Bear," they airlifted one battalion of the 172d Infantry Brigade. In addition to the transport squadrons permanently deployed in Alaska, sub-units of other MAC Airlift Wings also participated in this exercise, as did sub-units of reserve component CONUS based units.

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TRAINING AIR RECONNAISSANCE SPECIALISTS IN FRG AIR FORCE

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 44-46

[Article by Lt Col L. Konstantinov]

[Text] Western military experts believe that the role of reconnaissance, including air reconnaissance, in preparing for and conducting combat operations, has never been as great as it is now. In their opinion, errors in assessing the enemy strength and his intentions can have extremely serious, even irreparable, consequences. Stemming from this situation, and taking into account the experience of recent local wars and armed conflicts, the command of the armed forces of the member countries in the aggressive North Atlantic alliance and its combined armed forces as a whole, are striving to equip their forces with the most modern reconnaissance equipment and other technical means.

However, as the foreign press notes, highly qualified specialists are needed to use and maintain complex equipment developed on the basis of the latest scientific achievements, and at times, even in areas entirely new to the armed forces, the personnel requirements also increase.

According to foreign press reports, in the FRG training of air reconnaissance specialists for the Air Force and air components of the Army and Navy is accomplished in an aerial photography training squadron within the 49th Fighter-Bomber Squadron (Fursten-Feldbruck Air Base). In this squadron, officers and non-commissioned officers of the West German Armed Forces are trained in the following main specialties: interpretation of aerial and infra-red photographs obtained by aerial reconnaissance; aerial strip mosaics and photo laboratory work; radar image interpretation; and maintenance of reconnaissance equipment.

Representatives of 23 various Bundeswehr units and sub-units are trained in the squadron. Most importantly these include the 51st and 52d Air Force Air Reconnaissance Squadrons; the 2d and 3d Navy Air Squadrons; five batteries of Army reconnaissance drones; and specialists in aerial photography from Air Force and Naval Aviation fighter-bomber and fighter units.

Moreover, courses on conducting tactical air reconnaissance with the use of aerial photographs are regularly organized for officers of all armed services,

especially for reconnaissance officers of Air Force fighter and fighter-bomber units, various command posts and other control organs.

PHOTO AND INFRARED IMAGERY INTERPRETATION. Training on this theme is carried out with some specialization, the direction of which depends on to which branch and armed service the student belongs. This is caused by variation in the nature of primary targets reconnoitered by the different armed services. For example, the FRG press writes that typical themes and targets for Army reconnaissance may include combat troop formations, crossings, guns, etc., and for the Navy -- ships, ports and others. Therefore, reconnaissance targets are broken down into 17 groups. Only Air Force interpreters are required to know them all, whereas Army and Navy interpreters learn primarily their own.

One of the conditions for acceptance of Air Force and Navy representatives (not required for Army specialists) for training in this specialty is knowledge of English. This is because interpretation results (reconnaissance reports), in accordance with NATO practice, must be prepared in that language. Candidates entring this sub-unit are formed into training groups of 8-12 persons.

The complete course is conducted in three stages, at the completion of which the qualifications Interpreter 1st Class, Master, and Officer-Specialist are awarded successively.

The first stage lasts 12 weeks (for Air Force representatives) or 8 (Army and Navy). During that time the students study the basics of interpretation, cartography and photogrammetry, and obtain skills in recognizing and evaluating primary reconnaissnce targets (according to armed service).

After two years' service in units following the first stage of training, during which knowledge and skills obtained are reinforced, as is familiarity with the actual requirements of interpreters, the students return to the training squadron and enter the second stage (for the Air Force -- 14 weeks; for the Army and Navy -- 9). They learn interpretation of more complex aerial photographs and infrared imagery, and study general information on the structure and tactics of armed services, and also are trained in analyzing the tactical situation from photo and infrared imagery under extremely severe time limits. After this, at the same time that the students obtain their "Master" rating, they are authorized to independently compile reconnaissance reports of interpretation results.

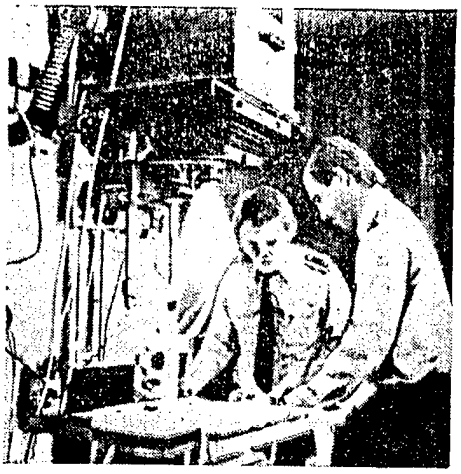
In the third stage of training (seven weeks) the students study the basic techniques of aerial photography; planning and calculating the use of available reconnaissance equipment; and also interpreting aerial photographs of industrial targets and compiling reports.

AERIAL STRIP MOSAICS AND PHOTO LABORATORY WORK. The main contingent of students in this specialty are workers in photo labs at air bases (75 percent) and in photogrammetric reconnaissance platoons. During 15 weeks they study the basics of photo optics and photo chemistry, learn to make a photo mosaic, and develop photographs, reproductions and enlargements (Figure 1). After completing this course the qualification "Assistant Photographer" is awarded.

To obtain a "Master" rating the students take the next training course (14 weeks), during which they obtain theoretical knowledge and acquire practical experience in more complicated types of photographic work. In addition, they are taught the subject: "Organizing Training of Personnel at the Work Place and Required Materiel Support."

INTERPRETATION OF RADAR IMAGES. Side-looking airborne radar is being more and more widely used in air reconnaissance units, and, as the foreign press notes, there are great fundamental differences between interpreting photo and infrared images and radar photographs. There the squadron opened a special course in 1980 to train interpreters of radar images. Individuals who have completed the first stage of training in the speciality, "Photo and Infrared Imagery Interpretation," attend this course. During the course of 7 weeks (13 to obtain the rank of master) they study the mathematical and physical principles of reconnaissance radars, and the distinguishing features of certain categories of targets in a radar image, and learn to work with television decoders, computers, and other equipment.

MAINTENANCE OF RECONNAISSANCE EQUIPMENT. The main task of this course is to train specialists in maintaining electro-optical and infrared reconnaissance equipment, and mechanics for camera guns and photo equipment used for photographing images from radar indicators, and automated devices for displaying aerial photos. In addition, the basics of photography and photo interpretation are studied, just as interpreters take an introductory course in "recon equipment." In the opinion of West German experts, this enables both to better understand the entire cycle of obtaining data with the aid of various aerial reconnaissance equipment, to recognize the inherent requirements, and to make it possible for them to deepen knowledge in their specialty. Completion of the



(Figure 1). Practical Exercise in Mastering Photo Enlargement

(Figure 2). Exercise in Using Control and Measuring Equipment to Check the RF-4E Recon Aircraft Aerial Camera

general and specialized electronics course in the Air Force Technical School Number 1 is a prerequisite for a candidate's acceptance.

Seven instructors conduct classes in groups of no more than six students each. They have four training classes sufficiently well equipped with laboratory and control and measuring equipment (Figure 2), training equipment and stands. During training, which lasts 20 weeks, the students study the following main systems: RF-4E Aircraft: aerial photo equipment; infrared reconnaissance systems, information collection and processing equipment; RF-104G: Aerial photo equipment, infrared system; F-4F and F-104G: camera gun, photo equipment for photographing images from the radar indicator screen, automated device for displaying camera gun film.

To train the students, the squadron is equipped with a significant quantity of various types of training equipment, part of which was made specifically for this sub-unit. Thus, there is an "RF-4E Aerial Photo Equipment" simulator, which uses all the cameras found on aircraft of this type, and also reconstructs camera control equipment contained in the forward and rear cabins of the reconnaissance aircraft.

According to the Western military press, the students are trained by 25 experienced instructors and teachers, who on the average conduct up to 21,000 hours of training annually.

In 1982 approximately 230 personnel were trained. Most training materials are prepared in the squadron itself, but some come from companies (documentation on the use of simulators and technical equipment) and military units (aerial photographs, recorded radar images, etc.).

9069
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AMERICAN ELECTRONIC SECURITY SYSTEMS FOR U. S. AIR BASES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 46-52

[Article by Reserve Captain 2d Rank V. Mosalev]

[Text] To implement its global expansionist policy, the Pentagon has created a far-flung network of military bases on the territory of the U. S., its allies and states dependent on the U. S. In the opinion of American strategists, this ensures the United States a constant military presence and direct influence on the political situation, first of all in those countries in which they are deployed, and also in other world "hot spots." U. S. Air Force air bases occupy a prominent place in the overall system of American military bases. Thus, according to AIR FORCE JOURNAL, the Air Force has approximately 80 major bases, of which 32 are located in the Continental U. S. and 48 are in various countries. Moreover, there is a large number of other installations which support Air Force operations.

In recent years, the Air Force command has been carrying out a number of measures to strengthen the security of air bases and other installations, primarily through the widespread introduction of electronic systems which, foreign specialists believe, significantly increase the effectiveness of security and substantially reduce the number of personnel involved in fulfilling that task. These systems use means of detection whose operation is based on exploiting various physical fields and phenomena. These include, in particular, radar, seismic, acoustic, hydroacoustic, magnetic, electromagnetic, vibration, balance, electro-optical (television, infra-red, IR imaging, laser, photo detector), and others.

According to foreign press reports, setting up radioelectronic security systems on American air bases and installations began in the late 1960's during the course of implementing special programs called "Safe Look," "Safe Nest," and "Safe Ramp." They included seismic, electromagnetic, vibration and balance sensors, connected by cable communication links with indicator panels on control boards located in guard towers. The control boards were of two types, which provided for receiving signals from 10 or 150 sensors. The latter could also indicate the approximate area of intrusion since each group of sensors had its own communications channel.

In 1972 the U. S. Department of Defense adopted a new program of developing electronic security systems for military installations, which included 50 separate projects and was called BISS (Base and Installation Security System). The Air Force was designated as chief executive agent. In accordance with this system, the Army was tasked to develop security systems for structures, internal room security, and search and alarm instruments. The Navy was tasked to develop systems for at-anchorage ship security, and security of port and hydraullic structures, radar, and automated data processing systems. The Air Force is developing cable seismic and electromagnetic systems, closed circuit television and vibration detection and observation systems, automatic systems for transmitting and processing sensor signals and detection indications, and automated equipment for checkpoints with the aid of which it will be possible to identify voices, fingerprints and signatures.

Initially, within the framework of BISS, the Air Force implemented the "Pave Safe" program, through which more than 100 especially important installations were equipped with new systems by 1981. In these systems, buried cable passive combination seismic-electromagnetic sensors are laid for perimeter security of installations, vibration sensors are hung and closed circuit television surveillance systems set up on the fences, and ultrasound and microwave radar doppler sensors are used for security of warehouse rooms.

Foreign specialists believe that fixed, combination automated electronic systems, such as so called "electronic fences," consisting of cable sensors, both buried and hung on the fences, are most suitable for perimeter security of permanent structures, while small, mobile electronic devices and search and alarm instruments should be used for temporary security of mobile facilities and when it is necessary to rapidly develop a security system.

As a rule stationary systems are powered from an external network, and they use cable or wire communication lines from the sentry post, while mobile security systems and search and alarm systems usually have their own power sources and transmit detection signals to the sentry post or patrol by UHF radio in the range of 126-174 megahertz with the aid of a built-in 1 to 5 watt radio transmitter. The transmitters can communicate at distances of 8 to 40 km. If automatic ground retransmitters are used (for example RT-1175, AN/GSQ-21, AN/GSQ-157 and others), the range of transmission may be increased by another 40 km. UHF AN/GSQ-185, AN/GSQ-187, R-2016, and AN/USQ-46 receivers are used to receive signals from search and alarm systems. Control of automated equipment from the sentry post is accomplished using UHF radio, usually in the 310 to 322 megahertz range.

Some Air Force bases and installations are located on the shores of oceans and seas and the banks of lakes and rivers. Their security from the water side is accomplished by electronic systems which detect underwater swimmers, underwater craft, boats and inflatable rafts.

Characteristics of existing and future electronic systems and means of securing air bases and other U. S. Air Force facilities are presented below.

RADAR SYSTEMS. Their operation is based on receiving a radar signal reflected from the intruder. They may employ servicing stationary, mobile, portable or hand-portable radars; autonomous, remotely guided radars; and linear cable and flat cable radar emitters and receivers. Thus, the AN/FPS-109 stationary system, used for security along broad water expanses, consists of two radars separated by several kilometers, mounted on 18 and 27 meter towers. One is controlled remotely using a cable line or UHF radio from the control post, which is located at the other station. Small surface targets (launches, boats) can be detected at distances of up to 27 km.

Mobile radars (for example AN/TPS-25, AN/TPS-31 and AN/TPS-58, and "Camp Sentinel") can detect a crawling man at distances up to 2 km, a walking man at up to 7 km and vehicles and launches at up to 20 km. The time required to deploy one radar is 15 to 30 minutes.

Portable radars (AN/PPS-5, AN/PPS-15, AN/MPS-36, AN/TPS-21, AN/TPS-33, AN/TPS-45, AN/TPQ-38 and others) are used to secure individual sectors not covered by stationary and mobile radars, and also to create temporary security systems. Such systems are carried by a crew of 1 to 3 men, are readied in 5 to 10 minutes, and can detect a crawling man at a distance of 0.5 to 2 km, a walking man at 1.5 to 7 km and moving vehicles at 3 to 10 km. A stationary remote-controlled variant of the portable AN/PPS-15 radar has also been developed.

Hand-portable radars (AN/PPS-9, -10, -11, -12, -14, -17 and others) are intended for patrols. They are fastened to the chest, and during a short halt scan the terrain as the operator slowly turns. Such radars permit detection of a crawling man at 200 to 500 meters, a walking man at up to 1,500 meters and vehicles at up to 2,000 meters. The AN/PPS-5 and AN/PPS-12 radars in combination with the AN/GSQ-113 UHF radio station can serve as an independent remote-controlled station.

Autonomous remote-controlled radars are used in systems intended to secure limited sectors of open territory and large buildings, and also for creating "radar fences." Usually they operate as separated transmittors and receivers of constant or pulsed radar signal emissions operating in the microwave frequency range. Miniature radar equipment, which operates by triggering an alarm signal when a moving object distorts the electromagnetic field of the transmitter in the secured zone, are used to secure rooms and separate structures. Thus, the AN/GSS-20 miniature doppler system, which operates simultaneously in the microwave and millimeter wave bands, is used for internal security of warehouses (including nuclear storage sites) having a volume of up to 10,000 cubic meters. A modified variant of the AN/GSS-20 radar, which operates only in the millimeter band, has been created to secure aircraft in shelters.

To secure important Air Force targets, a bistatic radar can be used, the transmitter and receiver of which are placed in close proximity to one another. On the corners of the secured area, passive radar reflectors are set up, which change the direction of the radar beam. From the transmitter it strikes the first reflector, from the first reflector it strikes the second, etc., and from the last it strikes the receiver antenna.

Use of an autonomous radar system for individual security of B-52 and C-5 aircraft on their hard stands is planned. This system includes two small radars which form a single radar field covering the aircraft on all sides (Figure 1).

The AN/TPS-39 stationary doppler radar system is used on U. S. Air Force Strategic Air Command (SAC) missile bases. It consists of radar signal receivers and transmittors, separated up to 70 meters, each having two antennas with a 2 - 10 degree wide directional pattern (the transmittors operate employing a constant emission in the 1.7 gigahertz range). These and others are joined by cables, with the control and indication panel located at the sentry post. When the intruder moves through the "radar fence" a sound signal is turned on, and a light on the indicator indicates the area of the violation, to which a truck or helicopter patrol is dispatched. Moreover, a mobile variant of the AN/TPS-39 system has been developed, with miniature transmittors and receivers located 35 meters from one another.

Linear cable and tape systems are also used to create "radar fences." Thus, in Canadian-U. S. "Guidar" system, two coaxial cables placed in parallel at a distance of 0.6 to 1.5 meters and buried 7.6 cm deep, have uniformly arranged windows in the upper part of the shielding cable braid, through which one cable emits electromagnetic energy in the range of 30 to 250 megahertz, and the other receives this energy. A intruder crossing the "fence" which is formed triggers an alarm signal at the sentry post, and the place the violation occurred is lit up on the indicator of the control panel with an accuracy of up to 30 meters.

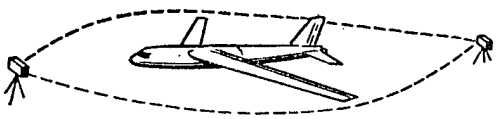

Рис. 1. Автономная радиолокационная система индивидуальной охраны самолетов на стоянке

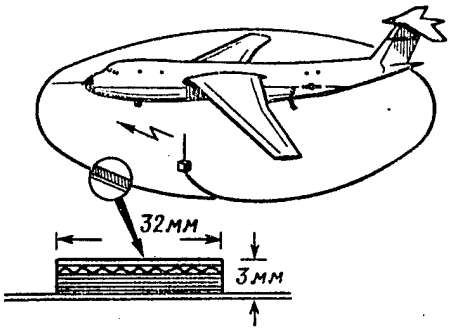

Рис. 2. Автономная ленточная радиолокационная система индивидуальной охраны самолетов на стоянке

(Figure 1). Autonomous Radar System for Individual Security of Aircraft on Hardstands

(Figure 2). Autonomous Tape Radar System for Individual Security of Aircraft on Hardstands

The cable used in the system is divided into 394 meter sections, and the overall length of each sector of the "fence" is 1,850 to 3,700 meters, but it can be increased to several times that length. Besides being set in the ground, the cables can also be mounted on a barrier. The Western press notes that tests of the system have shown sufficiently high detection reliability (99.5 percent) and a low level of false alarms (one in 48 hours operation).

The autonomous radar system designed to rapidly create a temporary "fence" uses electret emitters made in the form of a tape 32 mm wide and 3 mm thick, which is placed on the surface of the ground or fastened to a barrier. When the "fence" is intersected, part of the electromagnetic energy emitted by it is reflected off of the intruder and is picked up by an electrical element like a receiver. The doppler effect activates the alarm signal. The system operates in the frequency range of 20-30 kilohertz and has an emission power of approximately 0.5 megawatts. Required power is approximately 80 watts for each 100 meters of "fence." This includes the UHF transmitter which transmits the alarm signal to the sentry post. The system is small in weight and bulk, and according to foreign specialists can therefore become an on-board item of equipment, especially on military aircraft, to be deployed by the crew when the aircraft arrives at an airport where enemy sabotage operations are possible (Figure 2).

SEISMIC SYSTEMS. Their operation is based on detecting vibrations in the soil caused by footsteps or vehicular movement. A stationary seismic system is usually a network of buried interconnected geophones linked to a microprocessor. The memory of the microprocessor contains characteristics of soil vibrations from various sources (human, animal and vehicular movement, as well as wind, rain and other natural phenomena). The microprocessor distinguishes seismic vibrations caused solely by human or vehicular movement and computes the place of intrusion. The system draws its power from an external source or from a built-in battery capable of operating for up to six months. It is designed to protect unguarded sectors or to be used as a back-up system.

Seismic RSP [expansion not available] (for example the AN/GSQ-133, -139, -151, -154, -155, -158, -159, -176; TLD-3, -4; TRC-3A and others), which transmit detection signals by UHF radio circuit (in some cases by cable), may be used in temporary systems and in some sectors of permanent systems. During the period of U. S. aggression in Southeast Asia, the SADS (Surveillance and Detection System) was used to protect airbases. It consists of a number of seismic RSP, which are set along the base security perimeter.

The detection range of seismic sensors depends on the type and level of seismic background noise, and on the type of soil (strong wind and soft soil reduce the range). Seismic RSP detect a walking person at a distance of 30-80 to 300 meters, and a vehicle at 100-150 to 300-1,200 meters.

MAGNETIC SYSTEMS react to changes in the local magnetic field of the Earth caused by the movement of the metallic mass of an intruder's weapon or a vehicle. Stationary magnetic security systems use buried cable magnetic sensors, and temporary systems may also use magnetic RSP (in particular AN/GSQ-180, DT-368, -509, -514, -651). It is felt that magnetic means of detection are unlikely to give false alarms, but they may not be placed near a moving or

vibrating metallic mass (such as a chain link fence or hanging wires). Lightning can also cause false alarms.

The detection range of magnetic systems depends on the metallic mass which the person is carrying, or of which the vehicle consists. Thus the range for a magnetic RSP is 1.5 - 5 meters (for a person carrying a weapon) and 12-30 meters (for a vehicle). A cable system covers a zone 100 meters long and 2.5 meters deep. In addition, all systems permit counting intruders, and some classify them according to metallic mass.

COMPOSITE SEISMO-MAGNETIC EQUIPMENT such as the DT-516/GSQ RSP is used, which actuates only in response to moving objects having metallic mass (for example an armed man), and do not respond to others (animals, unarmed persons).

INDUCTIVE ELECTROMAGNETIC EQUIPMENT reacts to changes in electromagnetic fields which occur under the influence of a moving intruder. Only slowly moving objects can be detected by this system, irrespective of their weight and dimensions. Lightning, shaking branches of nearby trees and bushes, and heavy leaf fall can cause false alarms in some of these systems. Detection range depends on the soil's electrical conductivity. For example, with a thick layer of fallen leaves and heavy snow cover it is reduced, especially for buried cable systems and RSP.

The PASS (Parked Aircraft Security System) is used to secure aircraft being guarded at airfields. Its instruments may be set up around each aircraft or a group of aircraft. Reportedly the complete system can protect up to 1,000 aircraft. When in operation PASS creates a controlled electromagnetic field. An audible alarm signal sounds if the balance between the system's instruments and the aircraft is disrupted by an intruder. The system is insensitive to rain, snow, wind, lightning and the movement of birds. Its power source is either autonomous or external.

The Sylvania security system is in the form of a fence. Through its wooden posts pass four horizontal pipes, which create a balanced electromagnetic field that is sufficiently intense within a distance of 1-2 meters. An intruder activates an alarm signal upon approaching.

With the use of inductive electromagnetic RSP (for example the AN/GSQ-23, -160 and others) a moving person can be detected at a distance of 4.7 - 46 meters, and a vehicle up to 150 meters.

A COMPOSITE SEISMO-ELECTROMAGNETIC SYSTEM is a cable buried 5 - 30 cm, consisting of sections 100 meters in length with a miniature signals processor. It detects intruders by their footfall or slow crawling movement along the cable, and by the metallic mass of their weapons. A large animal passing near the cable may cause a false activation. The foreign press reports that this system, which is widely used to secure nuclear weapons storage areas, is usually located along the perimeter barrier of the facility.

ACOUSTICAL EQUIPMENT reacts to noise made by an intruder. It consists of highly sensitive linear sound receivers and RSP, the distance of operation of

which is determined by the amount of noise from the intruder. Thus, acoustical RSP (AN/GSQ-107, -117, -161, TLD-4, DT-383, -563) can record human speech at a distance of 10 - 300 meters, a moving vehicle at 100 - 300 to 1,000 - 3,000 meters, and a low flying aircraft or helicopter at from 300 - 3,000 meters.

HYDROACOUSTIC systems, such as passive and active hydroacoustic bouys, coastal hydroacoustic stations, cable reflectometers and small, carried hydroacoustic stations, are used to secure airbases from the side of water expanses.

Passive hydroacoustic bouys with hydrophones are set along the perimeter of a secured sector having a depth up to 100 meters, at a distance up to 16 km from the shore. They can detect moving underwater objects at ranges of 3.5 - 4.5 km. Active hydroacoustic bouys are set in shallow areas on the near approaches to the shore. They can detect moving underwater objects at 1.5 km distance, and frogmen in underwater towing vehicles at 1.4 km. Active, scanning hydroacoustic stations, the hydrophones of which are set underwater on tripods, bouys, mooring piles, piers, jetties and barges, are used to detect frogmen right at the shoreline. These systems detect frogmen at distances if 500 - 1,000 meters. Security personnel patrolling under water can use small, carried hydroacoustic stations (AN/PQS-1, DHS-2) which can detect underwater objects at 110 - 190 meters.

Cable hydroacoustic reflectometers are under development which U. S. specialists say will be able to be linked in a 10 - 20 km long segment, which will permit determining hydroacoustical noise at a distance up to 80 km.

COMPOSITE SEISMO-ACOUSTICAL EQUIPMENT is employed in the form of RSP (for example DT-562), in which the seismic channel is active and the acoustical is turned on by radio command from the sentry post (after a detection signal has been received on the seismic channel) for identifying the intruder by the sounds accompanying his movement. The detection range for a walking person is 50 meters, and for a vehicle is 500 meters.

VIBRATION EQUIPMENT registers vibrations of the barrier on which it is set when an intruder crosses. It consists of mechanical contacts or special cables. Mercury contacts placed on the supports of a barbed wire barrier or metal screen at 30 meter intervals and connected by cable to the sentry post are widely used. Attempts to cross the barrier or cut it activate an alarm signal.

In the FPS-1 and 2 vibration systems the sensor is a 3 mm coaxial cable, coated with a special substance which is sensitive to mechanical influences. Cable sections 300 meters in length are fastened to a wire fence every 0.5 meters, and are connected with a signal processor and filter, which protects the system from false alarms. The signal is triggered by constant vibration of the wire for one minute, which eliminates false alarms caused by accidental impacts against the fence by various objects. The control point can connect six sections, as a result of which one system complex can equip an 1,800 meter long fence.

To protect nuclear weapons storage sites, a special vibration system has been developed, the sensors of which are set on the upper part of the fence. The

sensors form two coiled, intermeshed spirals going in opposite directions, made out of narrow strips with long, bent projections. Their connecting causes the alarm to sound.

The cable type vibration RSP, AN/GSQ-177, is made in the form of a spiral out of barbed wire or chain netting 100 meters in length. A sensitive sensor consists of two 50 meter cables, the capacitance of which changes under the influence of mechanical vibrations. The detection signal can be transmitted to the sentry post by cable or UHF radio.

BALANCE SYSTEMS react to changes in ground pressure from an intruder's movement. Their range depends on the weight of the intruder. Two parallel flexible pipes with a special fluid (for example the RSP AN/QSS-15 and -134), or a coaxial cable, the capacity of which changes under pressure, serve as sensors for balance systems. Each balance system complex covers a zone 60 - 300 meters in length, and can detect a person passing by at a range of 0.5 - 3 meters, and a vehicle at 3 - 10 meters.

PHOTOELECTRIC SYSTEMS. Their operation is based on a change in the resistence of a photoelectric element under the influence of a stream of light falling on it, caused by an intruder's movement between the emitter and receiver of light waves. Such systems are designed, in particular, to protect ballistic missile launch complexes.

INFRARED (IR) EQUIPMENT which detects the infrared emission of an intruder, may be active or passive. Usually an active IR instrument, the beam of which is placed at a height of 0.3 - 0.45 meters from the ground, is used to create a so-called "infrared fence." Intersecting this beam activates the alarm signal. An autonomous, passive IR alarm signal system, which reacts only to moving objects and is stable with respect to false activation from sharp changes in the surrounding temperature, has also been developed. Its detection range is 300 meters, and it can operate on its own power source for 26 hours. The foreign press reports that passive infrared RSP models AN/GSQ-135 and DT-565, which can detect an intruder at distances of 400 - 1,200 meters, are widely used in defensive systems.

INFRARED IMAGING SYSTEMS operate on the principle of detecting heat contrasts against the surrounding background. A type 19-111 instrument, set on a tripod, which can distinguish temperature variations of 0.1 degrees is used to create an "infrared imaging fence." It can cover a zone 3,000 meters in length. The infrared imagining RSP AN/GSQ-171 can distinguish 0.2 degree variations, and has a detection range of 3 - 18 meters. In addition, AN/PAS-7 and AN/UAG-1 infrared imaging instruments, which can detect a person at a distance of 200 - 750 meters and a vehicle at up to 3 km, are used at sentry posts.

TELEVISION (TV) SYSTEMS are stationary equipment sets, in which TV cameras are fastened or are placed on remote controlled revolving apparatuses. Existing security systems, according to foreign press reports, usually use closed circuit TV systems. They are supplemental means of detection, which can identify the reason that an alarm system activates in secured sectors which are not

observed from the sentry post by other instruments. Experiments conducted by foreign specialists have shown that these sectors can be inspected 5 - 6 times more quickly with TV than with visual observation. TV systems are turned on only when an alarm signal is received from other detection systems. They require good lighting of the observed sector. Some of these systems provide a video recording mechanism which excludes the possibility of penetrating the secured zone in another place by distracting the attention of the sentry. At present, TV cameras which operate at low light levels and at night and do not require additional lighting of secure sectors are becoming widespread in such systems. This is especially important when it is necessary to observe black-out. Such cameras can also be used in underwater TV security systems.

One of the closed circuit TV systems developed includes 30 - 40 scanning televison cameras, which transmit images on a UHF radio circuit 25 - 30 km to a receiver located at a sentry post. The TV cameras are set on tripods, have a 180 degree sector of scan, an angle of vision of 13.5 x 8 degrees, and can detect a person at a range of 50 meters and a vehicle at 150 meters.

LASER DEFENSE SYSTEMS are used as a "fence" formed by laser beams, the intersection of which activates an alarm signal. Thus, one such system consists of invisible beams (from two laser emitters toward photo detectors), which may be deflected by special reflectors, permitting a change in the direction of the "fence" due to the nature of the terrain in the secured sector.

The all-weather IDIS (Intrusion Detection and Identification System) is used to secure bomber hard stands at air bases. It employs a sectional, six beam "laser fence" with a height of 165.2 cm. The length of each segment is 6 - 150 meters. The lower beam passes 15.2 cm from the ground, and the distance between beams is 30 cm. Activating the alarm signal occurs only from simultaneous intersecting of several beams, which excludes the possibility of false alarms arising from small animals, birds and falling leaves. There is a mobile variant of this system set on a tripod, which can be rapidly set up at alternate and temporary airfields.

In the Mitre Corporation's six beam "laser fence," all beams are modulated by a particular code, which enables the sentry post to determine which was intersected, and also excludes the possibility of an intruder crossing the fence by directing a beam from a carried laser emitter at the photo detector (which someone helping the intruder cross the "fence" might use).

The American press notes that posts equipped with displays and control consoles are essential elements of radioelectronic systems for securing airbases and other installations. They are usually located at standard guard towers, erected from 3 meter metallic sections, which can be assembled in an arch 15 meters in height. The tower has an observation platform with a guard box (a 3.6 meter platform), made from aluminum panels containing filler material. The tower's height and its location are selected in order to provide observation of key areas of the security system -- visually in daytime and with the use of electro-optical instruments at night.

Whereas during the period of U. S. aggression in Southeast Asia the standard airbase security system included a seismic system, three AN/TPS-33 radars, eight AN/MPQ-4A artillery reconnaissance and observation radars, and IR vision devices, now Western reports indicate that complex, composite and highly redundant electronic equipment is used. Automatic detection, determination of the intruder's location and identification, system management and verification of operability are accomplished with the aid of computers, and in temporary systems and individual detection equipment, by microprocessors, which eliminate or minimize the number of false alarms.

In the opinion of American specialists, the use of reliable, automatic electronic security systems eliminates the need for numerous guard posts, since, when an alarm is activated the sentry from his guard tower, either visually or using IR, infrared imaging or TV equipment, searches the point of intrusion, and if necessary sends an armed patrol there to detain the intruder. Patrols are sent in trucks or helicopters to distant sectors which cannot be observed from the tower. The Air Force command periodically conducts unannounced inspections using "experienced intruders" to check the combat readiness and reliability of the security system.

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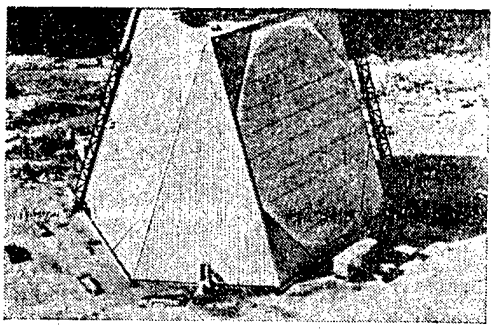
U.S. 'PAVE PAWS' RADAR

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 53-54

[Article by Engineer Major V. Pavlov]

[Text] In the system of militaristic preparations carried out by U. S. imperialist circles, the Pentagon pays great attention to controlling its armed forces through using automated systems, an important portion of which are means of collecting and processing information about the aerospace environment. In the opinion of American military specialists, powerful, high-capacity, multi-function radars with phased antenna arrays (phased array radars -- PAR) which enable targets to be detected and tracked at long ranges, are at the basis of these systems. One of the modern stations of this type is the "Pave Paws" radar (see drawing, Figure 1). According to foreign press reports, two such radars are currently deployed, on the West and East coasts of the continental U. S. (Beale Air Force Base, California and Otis Air Force Base, Massachusetts). Each can detect aerial targets at ranges of approximately 4,000 km within an angular field of view of 240 degrees azimuth and 82 degrees elevation (from 3 to 85 degrees).



(Figure 1). Overall View of Pave Paws Radar Station

The "Pave Paws" antenna system consists of two identical, 22 meter diameter PAR, positioned at a certain angle from one another, each containing 1,792 active elements. In addition, 885 passive elements are distributed on the surface of each PAR, designed to create a rather narrow radiation pattern with a low level of side lobes. The active elements are directly linked with transceiver modules by specially constructed sockets. The total emitted impulse power of the transceiver modules is approximately 585 kilowatts. This ensures an average radar power of 145 kilowatts, with a definite relationship between the length of the impulses and the frequency of their repetition.

The foreign press notes that "Pave Paws" is the first station which operates in the 420-450 megacycle frequency range and is constructed entirely with solid-state elements. It has more than 50,000 powerful transistors in all. The radar has a special cooling system to ensure that proper operating temperature conditions are maintained. This cooling system constantly circulates cold water flowing out of the 756,000 liter reservoir from a depth of 120 meters. The water flows at a rate of approximately 230 liters per minute.

Electricity for "Pave Paws" is obtained from six diesel electric generators, each with a power of one megawatt, only two of which are in operation under normal conditions. However, in order to prevent freezing of PAR elements in sub-freezing temperatures, two additional generators are used. The remaining two are held in reserve. In order to provide for 24-hour a day operation of the radar for an extended period of time, approximately 530,000 liters of underground fuel is stored at the position. No shift to commercial electric power is planned. There are approximately 200 service personnel at the station.

According to the Western press, future modernization of the "Pave Paws" radar is planned, including a significant increase in the impulse and average emission power. This is to be achieved by increasing by nine meters the diameter of each PAR, and by adding another 1,792 and 885 active and passive elements respectively. According to American experts, the impulse and average radar power will double and the operational range will somewhat increase as a result of these improvements. In addition, the radiation pattern will be reduced and the resolution and angular coordinate accuracy will be improved.

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STATUS, FUTURE DEVELOPMENT OF NAVIES OF NATO COUNTRIES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 55-63

[Article by Capt 1st Rank V. Afanas'yev]

[Text] The ruling circles of the North Atlantic bloc, taking refuge in declarations about the "growing Soviet threat," are increasing the activeness of preparations for unleashing war against the USSR and the other countries of the socialist community. They place special reliance in their militaristic preparations on increasing the might of the navies, which possess versatility, high mobility and varied weapons, and they intend the navies to accomplish the following basic tasks: to gain and hold superiority at sea; to inflict nuclear strikes against targets on enemy territory; to support the ground forces on maritime axes; to conduct naval landing operations; to implement blockades; to provide naval troop, arms and supply transport; and to exert military-political pressure through demonstrations of force.

Noting the significant contribution of navies to the course and outcome of past wars, foreign specialists emphasize that the navy will play a prominent role in achieving the far reaching goals of the NATO bosses in the future as well. The ever growing importance of navies and their status and prospects for development find expression in numerous Western press accounts, one of which is the annual "Jane's" reference on the ships of the world's navies. Last year saw the 85th edition of this work, which has been published in Great Britain since 1897. It contains data on the navies of 147 states; more than 17,000 ships, patrol craft and auxiliary vessels.

The "Jane's" forward is traditionally and openly anti-Soviet in spirit, and reflects the desire of imperialist Western circles to hide the clearly expressed aggressive thrust of the activities and construction of the fleets of the U. S. and its NATO partners.

Materials contained in the 1982-1983 issue of "Jane's" show that the North Atlantic bloc's leaders are paying great attention to the development of their navies and are introducing the latest submarines, ships and patrol craft. These materials describe naval construction by the leading naval powers and quantitative and qualitative changes in their ships.

UNITED STATES. The U. S. has the largest and most modern Navy in the capitalist world. It is assigned a major role in implementing the global hegemonistic strivings of the country's imperialist circles. At the start of 1983 the U. S. Navy numbered 445 combat ships and patrol craft* (including 37 ships in special reserve), and also approximately 170 auxiliary vessels and almost 1,100 service craft. In addition, in wartime more than 250 Coast Guard escort ships, patrol craft and auxiliary vessels are transferred to the Navy. Approximately 2,700 combat aircraft and helicopters are in the inventories of Naval and U. S. Marine Corps Aviation. Overall Navy personnel strength is 745,000, including 192,100 Marines.

U. S. Navy construction is carried out in accordance with a long-term Naval development program, which envisions increasing to 600 the overall number of combat ships.

Nuclear ballistic missile submarines [SSBN] have an important role in this program. SSBN are one of the main components of the strategic offensive forces with which the Pentagon intends to implement its aggressive designs. The U. S. has 41 SSBN (2 "Ohio" class; 31 "Lafayette" class) (Figure 1); 5 "Ethan Allen" class; and 3 "George Washington" class). "Jane's" reports that 55 percent of the nuclear warheads in the country's nuclear arsenal are on SSBN.

Further deployment of the "Trident" SSBN system continued in 1982. The SSBN727 "Michigan," second in the "Ohio" class, was commissioned. Seven more submarines of this class are in various stages of construction. Moreover, it is intended that funds will be allotted in fiscal years 1983-1987 to build the next six. As the new SSBN are commissioned, the "Ethan Allen" and "George Washington" classes will be decommissioned from the active Navy and refitted as torpedo firing submarines.

The "Ohio" class submarines and 12 "Lafayette" SSBN which have been retrofitted, are armed with Trident-1 ballistic missiles. This missile has a separating nose cone with eight independently targetable warheads, each with a yield of 100 kilotons. Their range is 7,400 km. According to the foreign press, by the late 1980's or early 1990's, the "Ohio" class SSBN are to be armed with the more powerful Trident-2 ballistic missile, having a range of 11,000 km.

Great attention is being paid to strengthening general purpose forces. Aircraft carriers are considered to be the most powerful and versatile component of the general purpose forces, the main naval strike force in conventional wars, and a well-prepared reserve of the strategic forces in nuclear war. At the start of 1983 there were 13 aircraft carriers in the regular Navy (four nuclear -- the Enterprise and three Chester W. Nimitz class, and nine conventionally powered -- four "Kitty Hawk", three "Forrestal," and two "Midway" class). The Oriskany, Bon Homme Richard, Shangri La, Hornet, Bennington, and Forrestal (being refitted) are in reserve. The aircraft carrier Lexington serves as a training ship to train carrier pilots.

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*For more detail on U. S. Navy ships as of 1 July 1982, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1982, No 12, pp 85-86 (Ed.).

As the foreign press emphasizes, the Pentagon intends to increase the number of aircraft carriers in the Navy to 15, and hold them at that level. With this aim in mind, construction of a fourth nuclear aircraft carrier of the "Chester W. Nimitz" class (the Theodore Roosevelt) is underway, and funds have been allotted and preparations begun to build two more such ships. Moreover, a program has been worked out and is being implemented to overhaul all carriers in turn (except the Midway and Coral Sea which are to be deactivated at the end of the 1980's), in order to extend their service from 30 to 45 years. Accordingly, in October 1980 the Saratoga was sent in for repairs. It was recommissioned in February 1983. Modernization of the Forrestal began in January 1983 and is to conclude in May 1985. Then the Independence (1985-1987); Ranger (1987-1989); Kitty Hawk (1989-1991); Constellation (1991-1993); Enterprise (1993-1995); and others will be overhauled.* Refitting the "Nimitz" class nuclear carriers is planned for after 2005.

The U. S. Navy command assigns a prominent role in its plans for conducting combat operations at sea to multi-purpose nuclear powered submarines. As "Jane's" notes, the U. S. Navy has 84 nuclear powered submarines, the latest and most modern of which are the "Los Angeles" class (21 in operation; 15 in various stages of construction). Their displacement is 6,900 tons; their 30,000 horsepower nuclear power plant permits a speed of more than 30 knots; their submersion depth is up to 450 meters; and they are armed with four 533 mm torpedo tubes, Mk48 dual-purpose torpedoes, and anti-submarine (SUBROC) and anti-ship (Harpoon) missiles. It is planned to arm these nuclear powered submarines as well as other types with Tomahawk cruise missiles in the future.

According to the foreign press, the total number of U. S. multi-purpose nuclear powered submarines should reach 100 by the end of the 1980's.

In recent years the development of the surface navy has received much attention. Having set a goal of achieving a "substantial superiority" over the Soviet Navy, the Reagan Administration has begun demothballing two "Iowa" class battleships (the New Jersey and the Iowa) each displacing 58,000 tons. Explaining the need to place these ships in operation, U. S. Secretary of the Navy Lehman declared: "This is the quickest and least expensive way to increase the Navy's offensive firepower. By demothballing a battleship we obtain a mighty ship at the cost of a frigate."

In accordance with Pentagon plans, a battleship will become the nucleus of a surface strike group for participating in "nuclear deterrence;" fighting to gain naval superiority; supporting landing operations; and demonstrating military presence in areas of "vital interest" to the U. S.

During modernization, eight 4-container protected Tomahawk cruise missile and Harpoon anti-ship missile launchers and four 20 mm gun mounts were emplaced, a landing area and hanger for 3-4 helicopters was built, and new communications and fire control systems, radars, and electronic warfare equipment were

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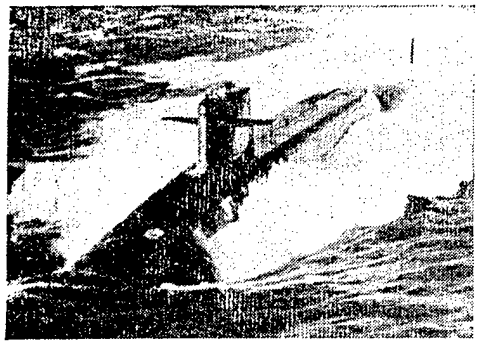
*While under repair (28 months) the carriers will be decommissioned from the active navy and attached to the reserve.

installed. Three 406 mm triple and six 127 mm double gun mounts will remain from former armament.

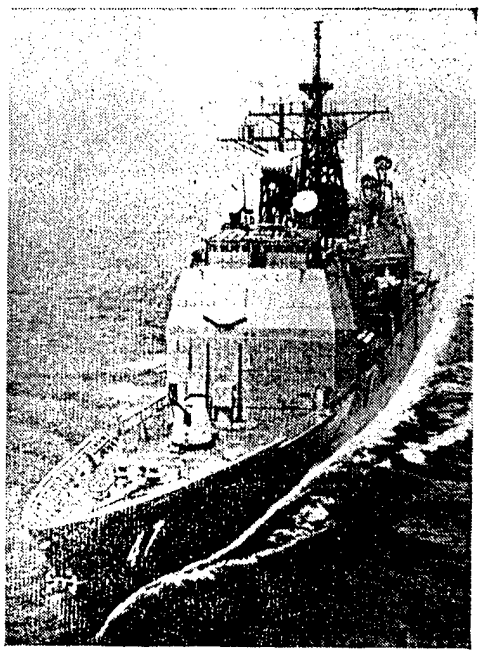
According to foreign press reports, the battleship New Jersey was re-fitted and in December 1982 was recommissioned. Work on the battleship Iowa is currently underway. It is to be recommissioned in 1985. In addition, the Navy command expects to obtain funds to recommission the remaining battleships, the Missouri and Wisconsin.

The U. S. Navy has 27 guided missile cruisers, including 9 nuclear (4 "Virginia" class, 2 "California" class, and the Truxtun, Bainbridge and Long Beach) and 18 with conventional power plants (9 "Belknap" and 9 "Leahy" class), 91 destroyers (41 guided missile), 89 frigates (30 guided missile) and 6 hydrofoil missile patrol combatants.

As noted in the foreign press, early this year the guided missile cruiser CG47 Ticonderoga (Figure 2) was commissioned. It is the lead ship out of seven being built. Its full displacement is 9,200 tons; length 172.8 m; width 16.8 m; draft 9.5 m; main energy plant power 80,000 horsepower; maximum speed 32 knots; armament -- two eight-container Harpoon anti-ship missile launchers; two general purpose launchers, each with two guides for the Standard air defense guided missile (Aegis air defense missile) and ASROC anti-submarine missile; two each 127 mm and 20 mm gun mounts; two 324 mm three-tube torpedo



(Figure 1). U. S. Nuclear Missile Submarine SSBN616 Lafayette



(Figure 2). U. S. Guided Missile Cruiser CG47 Ticonderoga

launchers; and three helicopters (starting with CG52 it is planned also to equip these cruisers with Tomahawk cruise missiles). The cruiser has a crew of 360, including 33 officers. The Navy plans to have 28 such cruisers by the mid-1990's. Deployment of two vertical launching mounts on each ship for cruise, anti-ship, air defense and anti-ship missiles (61 missiles per magazine) is planned.

Construction of the "Kidd" class destroyers (four) and "Pegasus" class hydro-foil missile patrol combatants (six) ended in 1982. Construction of the 31st "Spruance" class destroyer and "Oliver H. Perry" guided missile frigates took place. The guided missile destroyer DDG996 Chandler ("Kidd" class), nine guided missile frigates ("Oliver H. Perry" class), and three hydro-foil missile patrol combatants ("Pegasus" class) were commissioned.

The U. S. shipbuilding program for 1983-1987 calls for allotting funds to build a CGN42 type nuclear powered guided missile cruiser (in 1987) and four DDG51 type guided missile destroyers (in 1985 and 1987). The design of the CGN42 will be developed based on the nuclear powered guided missile cruiser Virginia. It is to be armed with Tomahawk cruise missiles, Harpoon anti-ship missiles, Aegis air defense missile systems, ASROC anti-submarine missile systems, 127 mm and 20 mm gun mounts, and torpedo launchers for anti-submarine torpedoes. Construction of four such ships is planned. "DDG51" class guided missile destroyers (8,500 tons full load displacement) will have anti-surface ship weapons (Tomahawk, Harpoon, 127 mm gun mounts); submarines (ASROC and anti-submarine torpedoes) and aircraft (Standard air defense missiles with vertical launchers and 20 mm Vulcan-Phalanx gun mounts). In the future they should replace the "Leahy" and "Belknap" class guided missile cruisers and the "Coontz" class destroyers. The Navy plans 63 such ships.

Modernization of the "Charles F. Adams" class guided missile destroyers has been underway since 1981. They are being equipped with all-purpose launchers for the Harpoon anti-ship missile and Standard air defense missile, and with modern electronic gear. Ten ships will be refitted before 1989, and the remainder (13) during the 1990's.

Naval amphibious forces number 64 assault ships and transports, with which 1.15 U. S. Marine Corps divisions can be transported and landed. They include two command ("Blue Ridge" class) and five all-purpose ("Tarawa" class) ships; seven helicopter carriers ("Iwo Jima" class); 12 amphibious transport docks ("Austin" and "Raleigh" class); 20 "Newport" class landing ships (tank); 13 "Anchorage" and "Thomaston" class landing ships (dock); and five "Charleston" class amphibious cargo ships.

According to "Jane's," construction of a "LSD41" class landing ship (dock), first of 10 planned, has been underway since 1981. It has a full load displacement of more than 15,700 tons; length more than 185 m; and speed of 23 knots. It can take helicopters and vertical and short take-off and landing [V-STOL] aircraft, four LCAC air cushion assault boats or 21 LCM6 assault boats, and 338 Marines on board.

In addition, the U. S. shipbuilding program for 1983-1987 calls for the Navy to begin buiding an LHD1 class amphibious helicopter transport dock in 1984, and an LPDX class amphibious transport dock in the future.

The foreign press emphasizes that the regular Navy has only 25 naval mine sweepers (22 of which are in emergency reserve), and also 23 RH-53D Sea Stallion helicopter mine sweepers, which can be based on aircraft carriers, all-purpose amphibious vessels, and helicopters. According to the reference, during the next 10-15 years, 14 mine hunter-sweepers and 17 inshore mine hunter-sweepers of new types are expected to be built to replace existing mine-sweeping ships.

Auxiliary ships are being developed with emphasis on further standardization and on constructing ships to provide all types of material and technical support. Thirteen such ships are in various stages of construction. Thirty-seven more are to be built during 1983-1987.

According to U. S. military specialists, by the start of the 1990's the U. S. Navy will have 41 nuclear missile and 100 nuclear multi-purpose submarines; 15 aircraft carriers; 4 battleships; more than 30 guided missile cruisers (6 nuclear); more than 200 destroyers and frigates (including guided missile ships); more than 30 mine-sweepers; 6 hydro-foil missile patrol combatants; landing ships and transports sufficient to accommodate 1.5 U. S. Marine expeditionary divisions; and necessary auxiliary ships.

NAVIES OF OTHER NATO COUNTRIES, according to "Jane's," numbered 1,542 major and minor combatants of various classes at the start of 1983, including 9 nuclear missile, 13 nuclear torpedo and 136 diesel submarines; 6 aircraft carriers (three anti-helicopter); one helicopter cruiser; 8 guided missile cruisers; 90 destroyers (38 guided missile); 176 frigates (85 guided missile); 41 small ASW [anti-submarine warfare] ships; 126 landing craft; 342 mine-sweepers; 120 guided missile boats; 44 motor torpedo boats; 183 patrol boats; 247 minor landing craft; and more than 1,000 auxiliary ships and boats.

The UK, France, FRG and Italy have the most modern navies according to Western military specialists.

The UK has the mightiest navy in Europe. It is assigned an important role in implementing the aggressive designs of the country and NATO. The UK Navy includes 147 combat ships (4 SSBN, 12 nuclear powered* and 16 diesel submarines; 3 ASW aircraft carriers; 4 guided missile cruisers; 8 guided missile destroyers; 18 guided missile frigates; 25 frigates; 8 small ASW ships; 8 landing ships; and 41 mine-sweepers); 9 patrol craft; 58 minor landing craft; more than 200 auxiliary ships and boats; up to 30 V-STOL aircraft; more than 120 ASW and troop carrier helicopters; and approximately 180 utility aviation aircraft and helicopters. Personnel strength is 74,200.

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*Six "Swiftsure" class; five "Valiant" class; and one "Trafalgar" class. The Dreadnought was decommissioned in 1982.

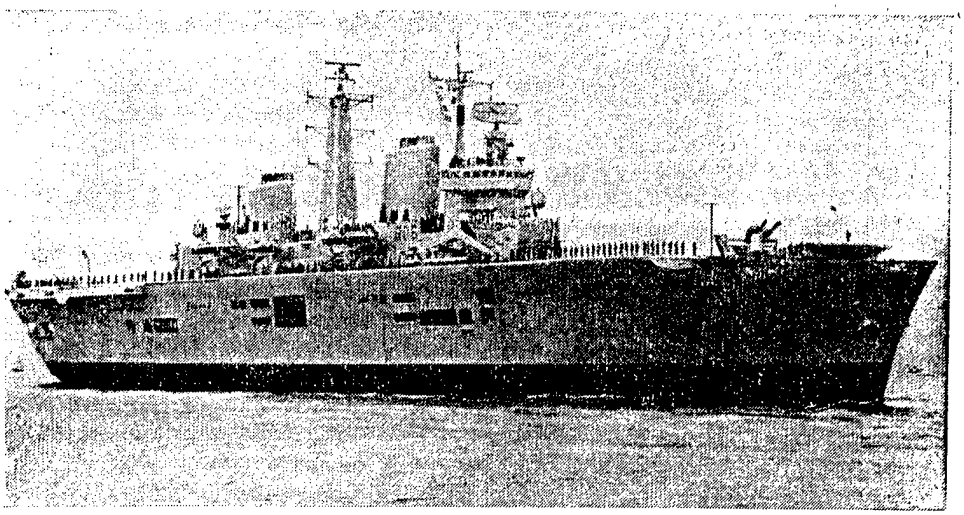
Obediently following Washington's militaristic policy, the Conservative Thatcher Government is stepping up military preparations and accelerating the arms race. Particular attention is being paid to further improving nuclear weapons and qualitatively improving the ship fleet by commissioning new, modern submarines and ships of various classes.

As Jane's emphasizes, refitting the "Resolution" class nuclear missile submarines is being implemented in accordance with the "Shevalin" program. In place of the Polaris-3 missile (with dispersing nose cone having three warheads of 200 kilotons), the Polaris-A3TK missile is being installed (dispersing MIRV type nose cone with six individually targetable warheads of 40 kilotons). Moreover, it notes that in connection with the end of the maximum service life of these SSBN (25 years) in the early 1990's, a decision has been made to replace them with new submarines carrying Trident-2 missiles. Construction of four or five 10,000-12,000 ton displacement SSBN is proposed.

In 1982 the Navy commissioned the nuclear powered submarine, S107 Trafalgar, the first of six planned for construction. Three others are in various stages of construction. A submarine is being developed under the new Project 2,400 to replace "Oberon" and "Porpoise" class submarines.

According to the foreign press, nuclear powered submarines are expected to be armed with Harpoon anti-ship missiles during the 1980's.

Last year the ASW aircraft carrier R06 Illustrious ("Invincible" class) (Figure 3); two guided missile destroyers ("Sheffield" class); a guided missile frigate



(Figure 3). UK ASW Aircraft Carrier R06 Illustrious, "Invincible" Class

("Broadsword" class); and two mine hunter-sweepers ("Brecon" class) were commissioned. At present, construction of a third "Invincible" class ASW aircraft carrier; four guided missile destroyers ("Sheffield" class); four guided missile frigates ("Broadsword" class); five mine hunter-sweepers ("Brecon" class); and a second patrol ship ("Leeds Castle" class) is underway. The Project 23 frigate is being developed to replace the "Linder" class ship.

Great attention is being paid to ship modernization. Five submarines (three "Oberon" class and two "Porpoise" class); the Fife guided missile cruiser; and four "Linder" class frigates were refitted in 1982. During refitting the Exocet anti-ship missile, Sea Wolf air defense missile, and new electronic equipment were installed.

According to foreign military specialists, the experience of naval participation in combat operations in the area of the Falkland (Malvinas) Islands during the Anglo-Argentine conflict will have substantial influence on the UK Navy's shipbuilding program. Thus, an additional order has already been placed to build five "Broadsword" class guided missile frigates to replace sunken ships.

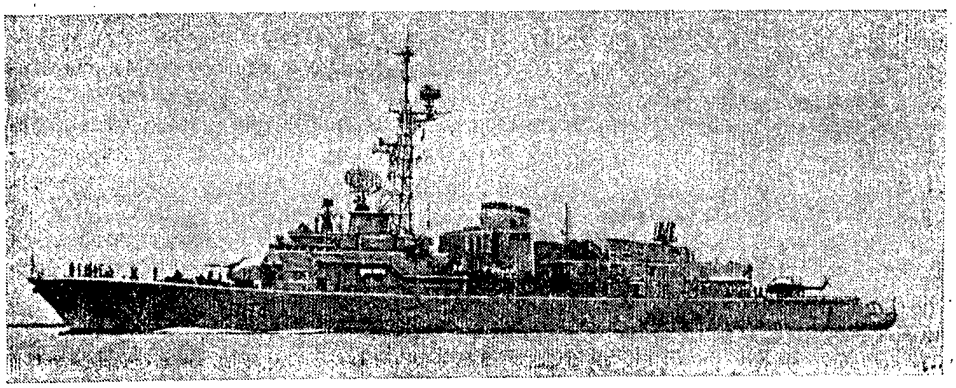
FRANCE. The French Navy is third in the capitalist world (after the U. S. and UK) in terms of number of combat ships and boats, weapons and equipment. It includes 134 major combatants, 41 minor combatants, approximately 180 auxiliary ships and small craft, and more than 160 combat aircraft and helicopters. Personnel strength is 69,000 (4,230 officers).

Nuclear missile submarines (five "Le Redoutable" class) and multi-purpose aircraft carriers (two -- the Clemenceau and Foch) are the strike force of the fleet. In addition there are 1 nuclear and 20 diesel powered submarines; 2 cruisers (one a helicopter carrier); 19 destroyers (including 12 guided missile ships) (Figure 4); 24 frigates (23 guided missile ships; see inset); 22 landing ships; and 39 minesweepers.

According to the Western press, in 1982 the French Navy obtained the S601 Rubis nuclear powered submarine; the D642 Montcalm guided missile destroyer; three "D'estienne D'Orves" class guided missile frigates; a landing ship (tank); two "Eridan" class mine hunter-sweepers; and a utility supply transport ship.

According to naval development plans, naval strategic forces are being improved and ship construction and modernization is underway. The SSBN L'Inflexible (commissioning set for 1984); four nuclear powered torpedo submarines ("Rubis" class); four guided missile destroyers ("Georges Leygues" class); two guided missile frigates ("D'estienne D'Orves" class); a landing ship (tank) and a minor landing craft; two guided missile boats ("Super Patra" class); seven mine hunter-sweepers ("Eridan" class) and a utility supply transport ship are in various stages of construction.

As "Jane's" emphasizes, in connection with the end of the maximum service life of the aircraft carriers in 1990-1995, it has been decided to replace them with nuclear powered aircraft carriers (displacement 32,000 - 35,000 tons; armed with 30-40 aircraft and helicopters). The keel of the first ship, Bretagne, is to be laid in 1985.



(Figure 4). French Guided Missile Destroyer D641 Duplex, "George Leahy" Class

FRG. The militaristic circles of the country, following NATO policy, are continuing to step up military preparations and increase the strength of the armed forces, including the Navy. NATO specialists note that the West German Navy, in terms of its composition, modern weapons and combat equipment, and level of professional training of its personnel, is a leader among the navies of the European capitalist states.

According to foreign press data, the FRG Navy numbers 167 major and minor combatants; more than 100 auxiliary vessels; more than 180 aircraft and helicopters (including reserve); and 36,500 personnel.

The most modern vessels in the fleet are the two "Bremen" class guided missile frigates; 18 "Type 206" class submarines; and 32 missile fast attack craft.

"Jane's" indicates that primary attention in developing the Navy is paid to qualitatively improving combat vessels, aircraft and helicopters and improving their strike and fire power. Two "Bremen" class guided missile frigates (F207 Bremen and F208 Niedersachsen) (Figure 5); and two "Type 143A" class missile fast attack craft were commissioned in 1982. At present four "Bremen" class guided missile frigates* and eight "Type 143A" class missile fast attack craft (to replace "Zobel" class torpedo fast attack craft) are in various stages of construction. When the former are commissioned, "Koln" class frigates will be retired from the active Navy.

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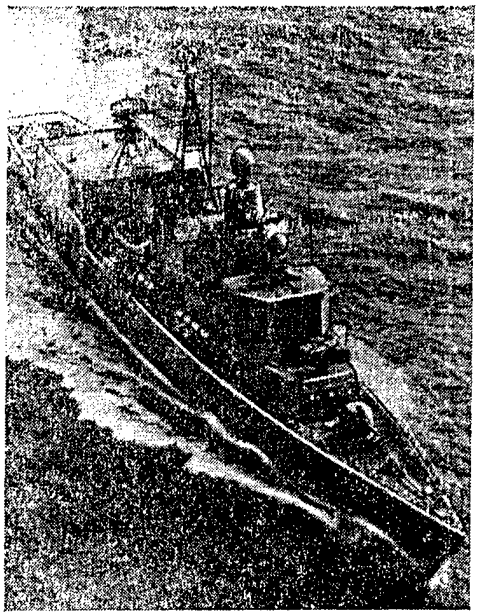
*Future construction of six more guided missile frigates of this class has been proposed.



(Figure 5). West German Guided Missile Frigate F208 Niedersachen

According to foreign press materials, the "Type 210" class submarine (displacement 750 tons) is being developed for the FRG Navy, to replace "Type 205" class submarines. "Type 332" class mine hunter-sweepers are also being developed. Construction of "Type 343" class mine hunter-sweepers (9 ships) is to begin in 1983. In addition, modernization of "Type 206" class submarines and "Lutens" and "Hamburg" class destroyers during the 1980's is planned.

ITALY. The NATO military-political leadership assigns the Italian Navy a prominent role in implementing its aggressive designs in the Southern European Theater of Military Operations. The Italian Navy numbers 76 combat ships, including 10 submarines; 3 guided missile cruisers; 6 destroyers (four guided missile ships); 12 frigates (6 guided missile); 8 minor ASW craft; 3 landing ships (tank); 34 mine-sweepers; 6 guided missile boats; 2 motor torpedo boats; 4 patrol boats; and 10 minor landing craft. There are also more than 140 auxiliary ships and boats. Naval aviation includes 18 "Atlantic" shore-based patrol aircraft and approximately 90 helicopters of various types. Personnel strength is 44,000.

According to the foreign press, development of the Italian Navy is being implemented in accordance with the 1975-1985 shipbuilding program, which, along wih augmenting the Navy with new ships, provides for the modernization (or decommissioning) of those in the operational inventory. The press also notes that two "Sauro" class submarines, two "Maestrale" class guided missile frigates, and two "Sparviero" class hydrofoil missile patrol combatants were commissioned in 1982. Vessels presently under construction include the light

ASW aircraft carrier Giuseppe Garibaldi (commissioning planned for 1985); six "Maestrale" class guided missile frigates; one "Sparviero" class hydrofoil missile patrol combatant; and four "Lerici" class minesweepers.

In developing the navies of other NATO countries, primary attention is paid to commissioning modern submarines, frigates, missile assault boats, and minesweepers.

THE NETHERLANDS is building two "Walrus" class submarines (to be commissioned in 1983 and 1984); four "Kortenaer" class guided missile frigates (two to be commissioned this year; the others in 1984-1985); and the "Alkmaar" class series of mine hunter-sweepers (15 vessels; first ship commissioned in 1982). In addition, there are plans to complete construction of two more "Walrus" class submarines and four "M" class guided missile frigates, which will replace the obsolete "Wolf" class minor ASW ships [Corvettes], by the end of the 1980's.

BELGIUM is building 10 new type mine hunter-sweepers (project developed jointly with France and the Netherlands). They are to be commissioned prior to 1987. It is also proposed that the Navy order five additional such ships.

NORWAY. In accordance with the Navy development program, it is planned that in the late 1980's the "Kobben" class submarines now in inventory will be replaced with new submarines of West German construction (1,100 tons displacement). A contract to build six such submarines in the FRG has already been signed. In order to lengthen the service life of "Oslo" class guided missile frigates, they will undergo modernization in the mid-1980's. Obsolete "Sauda" class coastal minesweepers (built in 1953-1955) are to be replaced at the end of this decade.

SPAIN. The aircraft carrier Prince Asturias*, three submarines ("Agosta" class) and three guided missile frigates ("Oliver H. Perry" class) are under construction. The ships of the last two classes are being constructed under license. In the future, the Navy command intends to add to the Navy eight more guided missile frigates (two "Oliver H. Perry" class and six "Descubierta" class) and two guided missile destroyers.

PORTUGAL. In accordance with naval development plans, by 1989 the Navy will acquire three "Kortenaer" class guided missile frigates. The first vessel, which will be constructed in the Netherlands, is to be commissioned in 1985. The others will be constructed in Portugal (under license). Acquisition of three new submarines is also planned.

GREECE. A "Kortenaer" class guided misile frigate, the third of five planned for construction, is being built (under license) in a Greek shipyard. The two previous frigates were built in the Netherlands and commissioned in the Greek Navy in 1981 and 1982.

*For more detail on this ship see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1983, No 3, p77

TURKEY. Construction in Turkish shipyards of a sixth "Type 209" class submarine and four "Dogan" class guided missile boats (under West German license), five patrol boats, and three landing ships (tank) is in progress. In the future it is planned to increase to 12 the number of "Type 209" class submarines in the Navy.

DENMARK. According to the naval development program, refitting the "Soloven" class torpedo fast attack craft with anti-ship missiles by 1985 is planned. In addition, three new submarines (type not yet determined) and several mine-sweepers are to be added to the Navy.

CANADA. Before the mid-1980's, modernization of operational submarines and "Annapolis," "Mackenzie," and "Restigouche" class frigates is to take place. Construction of a new series of six guided missile destroyers is to begin in the next few years. These ships will have a displacement up to 4,000 tons, and be armed with anti-ship missiles, air defense missiles, medium and small caliber gun mounts, anti-submarine torpedo tubes, and helicopters. The crews will number 200-225 personnel.

The data published in "Jane's" on the status and prospects for development of the navies of the NATO countries again underscore the aggressive essence of the policies of U. S. ruling circles and of their NATO allies, which, despite the will of peace-loving mankind, are continuing the arms race and relying on the further growth in the strength of the navies, which are called upon, in their opinion, to substantially influence the world situation and ensure imperialist world domination.

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WESTERN ANTI-SHIP MISSILES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 83 (signed to press 6 May 83) pp 65-69

[Article by Engr Lt Col B. Semenov: "Anti-Ship Missiles"]

[Text] The first part of this article examined anti-ship missiles in the inventories of the U. S., UK and French armed forces. This article reports on the anti-ship missiles of the FRG, Italian, Norwegian, Israeli, Japanese and Swedish armed forces. Their main tactical and technical characteristics are provided in Table 1.

The FRG ARMED FORCES currently have the following anti-ship missiles: U. S. Harpoon; French Exocet; and their own indigenous AS-34 Cormoran (Figure 1).

The latter meets normal aerodynamic specifications, and is guided in flight by aerodynamic vanes located in the rear, behind the outer wings. It includes a guidance system, warhead, motor, radio altimeter and an active radar homing head.

The warhead, developed by the firm "Messerschmidt-Belkow-Blom," is designed to defeat small and medium displacement surface ships.

The rocket motor uses solid fuel and has boost and sustaining stages of operation. During the boost stage the rocket accelerates to Mach 1 speed, which is then maintained by the sustaining motor. Batteries serve as the source of electrical power; the motor is electrically operated.

For security reasons the rocket is fired from low altitude outside of the zone of operation of enemy air defense (Figure 2). The pilot may detect the target visually or through radar. In the latter case, before the carrier aircraft takes off the coordinates of a previously reconnoitered target are entered into the inertial platform's computer. During the first stage of the flight the coordinates of the target are refined and radar information enters the navigational system of the carrier aircraft. After this the radar is shut off and the flight to the target continues under the aircraft's own navigational system. At a range exceeding the maximum firing distance of the missile, the

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NOTE: For Part 1 see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, 1983, No 4, p 64.

TABLE 1

PRINCIPLE TACTICAL-TECHNICAL CHARACTERISTICS OF ANTI-SHIP MISSILES

Name and Designation	Launch Weight (kg) / Warhead Wgt. (Type)	Type Propulsion System*	Max. Firing Rg.(km) / Cruise Speed (Mach)	Missile Dimensions (cm): length x diameter (body) x wingspan / Guidance System**	Primary Carriers
			F R G		
Cormoran AS-34	600 / 160 (shaped charge)	RDTT	37 / 0.9	440 x 34 x 100 / combined (I and AR)	aircraft
			I T A L Y		
Sea Killer Mk2	300 / 70 (high explosive)	TSU & RDTT	25 / 0.85	470 x 21 x 100 / radio cmd w/radar or optical tracking of tgt & msl	ships, assault craft, helos
			N O R W A Y		
Penguin Mk1	330 / 120 (semi armored piercing)	TSU & RDTT	20 / 0.7	300 x 28 x 140 / combined (I and IK)	ships, assault craft
Penguin Mk2	340 / 120 (semi armored piercing)	ditto	30 / 0.8	300 x 28 x 140 / (I and IK)	ditto
Penguin Mk3	347 / 120 (semi armored piercing)	RDTT	50 / up to 1	318 x 28 x 100 / (I and IK)	aircraft
			I S R A E L		
Gabriel Mk1	430 / 100	RDTT	18 / 0.7	335 x 34 x 135 / combined (I and PAR)	ships, assault craft
Gabriel Mk2	520 / 100	ditto	36 / 0.7	341 x 34 x 135 / cmbd (I & PAR	ditto
Gabriel Mk3	560 / 150	ditto	41 / 0.7	381 x 34 x 135 / cmbd (I & AR)	ships,acft, aslt craft
			J A P A N		
ASM-1	610 / 200 (semi armor pierce)	TRD	50 / 0.9	395 x 35 x 120 / cmbd (I & AR)	aircraft

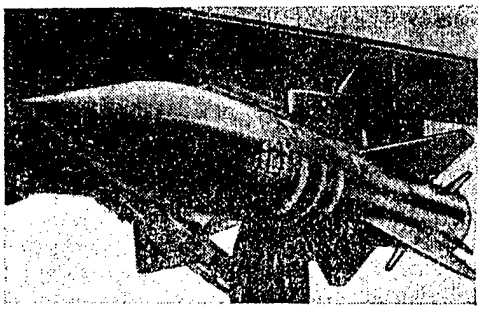
		S W E D E N			
Rb08A	1215 250	TSU & TRD	250 0.85	572 x 66 x 301 cmbd (I & AR)	ships
RBS15	595**** 200 high explosive	ditto	150*** 1	435 x 50 x 140 cmbd (I & AR)	aslt craft, aircraft

*Propulsion systems: TRD -- turbojet; TSU -- solid-fuel launching booster; RDTT -- solid fuel missile engine.

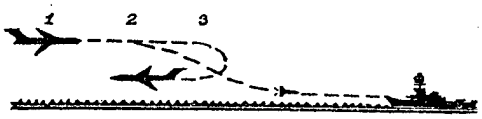
**Guidance systems: I -- inertial; AR -- active radar; PAR -- semiactive radar; IK -- infrared

***Estimated

****Without booster



(Figure 1). West German Cormoran Aerial Anti-Ship Missile



(Figure 2). Trajectory of the Cormoran Anti-Ship Missile: 1 -- Carrier aircraft flies at low altitude; 2 -- Missile launch point; 3 -- Carrier aircraft withdrawal from the attack

pilot again turns on the radar to refine the target coordinates. The information obtained is entered into the computer of the aircraft's inertial system, and the aircraft continues its flight. Upon entering the authorized engagement range, the pilot fires the missile, withdraws the aircraft away from the attack (at speed Mach 0.6 - 0.95), and may strike another target. The missile flies independently, without any guidance from the carrier aircraft. A short time after being fired, on command from the inertial platform, it descends and flies to the target at low altitude, which is maintained with the aid of the radio altimeter.

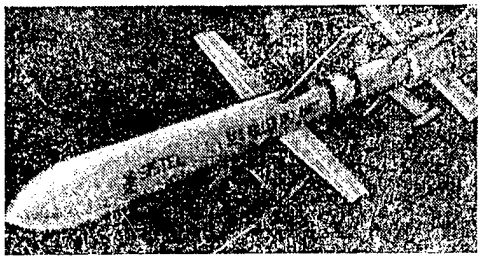
The ITALIAN ARMED FORCES have the Sea Killer Mk2 missile of their own manufacture, and the Otomat, developed jointly with France.

The Sea Killer Mk2 (Figure 3) employs a "rotating wing" aerodynamic system. It is guided in two ways. The first is by radar and command guidance, which is transmitted to the missile by radio circuit. The second is using an optical sight and command guidance, which is accomplished upon shifting the position of the control arm and is transmitted by the missile also by radio command. In both cases the height of the missile's flight is maintained by radio altimeter. The warhead is exploded by a percussion fuse.

The shipborne variant, in contrast to the aerial, also has a booster, which is jettisoned after it has finished operating. The Agusta and SH-3D helicopters, frigates and guided missile boats are armed with the Sea Killer-Mk2 missile.

The air-launched missile system has been named Marte, and the shipborne, Mariner.

The missile is fired from the helicopter in the following manner (Figure 4). A helicopter armed with two missiles can patrol for 4.5 hours at a speed of 185 km per hour. At a range of approximately 50 km its radar detects a surface target and in several seconds determines the distance to the target. Then the radar is switched to a passive receive mode and the helicopter descends to 50 meters. At a range of approximately 25 km to the target the helicopter begins to climb (to 200 meters), and at 20 km launches its missile, which immediately descends to 50 meters. The helicopter remains at its former altitude and follows the missile. Ten km from the target the missile begins to descend again, and 5 km from the target it flies at an altitude of 3-5 meters, until it strikes the target. After this the helicopter descends and leaves the attack area at low altitude. When an anti-ship missile is launched from a ship, it makes a steep climb, then descends to 50 meters and follows a flight profile to the target similar to that described above.



(Figure 3). Italian Anti-Ship Missile Mk2

(Figure 4). Trajectory of flight of the Sea Killer Mk2 anti-ship missile firing from a ship or helicopter: 1 -- Sustained sector of trajectory at 50 m altitude; descent and flight at 3 - 5 m altitude

The NORWEGIAN ARMED FORCES have two variants of the Penguin anti-ship missile -- Mk1 and Mk2. The former was developed in 1970 and the latter in 1973. Since the mid-1970's the Penguin Mk3 has been under development. The F-16 aircraft is to be equipped with this missile in the 1980's.

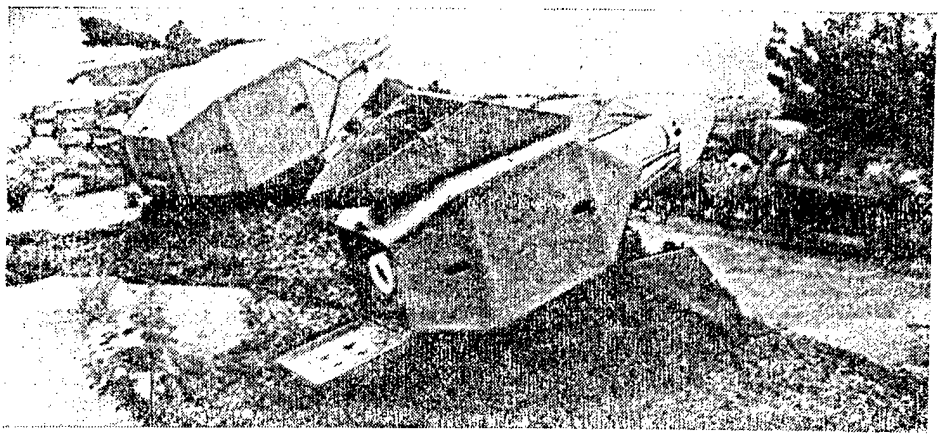
All three variants, which have a canard aerodynamic configuration, consist of three main parts: nose cone section, warhead and motor.

The inertial guidance section, radio altimeter, passive infrared homing head and fuel source are located in the nose cone section. As in the missiles described above, the inertial system and radio altimeter provide for flight to the area of the target. The homing head begins to operate in the final sector of the trajectory, and guides the missile by the target's infrared emission. The operating range of the nose cone section is 6 - 7 km. The maximum angle of deviation of its target seeker is approximately 45 degrees.

The semi armor-piercing warhead is exploded by a delayed action percussion fuse, which allows the missile to penetrate the ship. The shipborne variants use a solid fuel sustaining motor and a booster. The aerial variant (Mk3) does not have a booster.

Frigates and missile patrol boats are armed with shipborne variants of the missile. Four to six containers with missiles are placed on the deck in platforms elevated 15 - 20 degrees.

Two Penguin modifications are used in coastal permanent (Figure 5), semi-mobile and mobile systems.



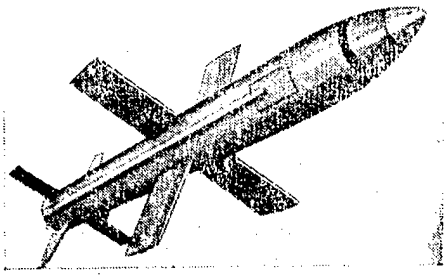
(Figure 5). Launchers (Containers) for the Norwegian Penguin Coastal Fixed Anti-Ship Guided Missile System

The ISRAELI ARMED FORCES obtained the Gabriel Mk1 missile (Figure 6) for their guided-missile boats in 1970. It follows normal aerodynamic specifications, is

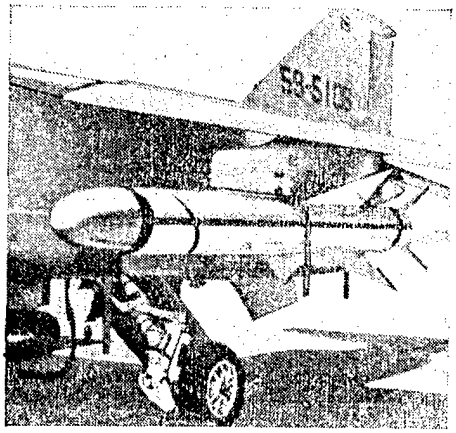
equipped with an inertial system, a radar altimeter and semi-active radar homing head. The missile has a solid fuel motor (boost and sustaining stages of operation), which enables it to fly at a speed of Mach 0.7.

The Gabriel Mk2 has a more powerful motor, which enables it to fly twice as far. None of its other main features were significantly changed.

The Gabriel Mk3 (operational in 1982), in contrast to the earlier variants, is equipped with an active radar homing head, and has a warhead which weighs 50 percent more. It can be employed in three modes: autonomous flight, flight with current target coordinate data inputs, and flight with corrections from commands received from the carrier's radar. The second mode provides a more accurate radar homing antenna orientation, and the capability of shifting to a homing guidance mode at a much reduced range, which improves target selection conditions and reduces the possibility of early enemy detection of the missile by its radar emission. The third mode provides more accurate guidance and permits activating the nose cone section in the last minute of the missile's flight. This mode also provides for using the optical sensors of the carrier. All three variants have the same flight profile. In the initial segment of its trajectory the missile flies at 100 meters. Then it descends to 20 meters, and after locking on to the target further descends to an altitude of several meters.



(Figure 6). Israeli Gabriel Anti-Ship Missile



(Figure 7). Japanese ASM-1 Anti-Ship Missile On F-1 Fighter Pylon

JAPAN began to produce its first indigenous anti-ship missile, the ASM-1, in 1980. It follows normal aerodynamic specifications, and is equipped with an inertial system, radio altimeter and active radar homing head. It mounts a

solid fuel motor with boost and sustaining stages of operation. The missile is equipped with a semi armor-piercing warhead, and it follows a low altitude flight trajectory.

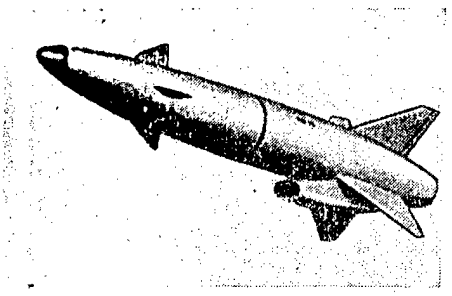
F-1 aircraft (Figure 7) are armed with ASM-1. The foreign press reports that they are also planned for future use on surface ships and in anti-ship coastal complexes.

The SWEDISH ARMED FORCES are presently armed with Harpoon (U. S.) and indigenous Rb08A missiles.

The Rb08A was developed on the basis of the Nord ST20 drone. Guidance during the early and middle stages of flight is accomplished through an inertial system, and during the final stage through an active radar homing head.

The missile is armed with a powerful warhead which, according to foreign press reports, can destroy a frigate. Its power plant includes a solid fuel booster and a turbojet motor.

A radar located on the carrier or on a support aircraft detects a surface target. Data on the target and carrier is transmitted to the fire control system, and the missile flight program is based on this data. The flight is conducted at low altitude. Surface ships and coastal anti-ship complexes are armed with Rb08A missiles.



(Figure 8). Swedish RBS15 Anti-Ship Missile

Sweden is developing a new anti-ship missile, the RBS15 (Figure 8). It has a canard aerodynamic configuration and will be equipped with a composite guidance system. During the early and middle stages, the missile trajectory must be guided by an inertial system and a radio altimeter; in the final stage an active radar homing head is employed. The missile flies to the target at an altitude of several meters. A turbojet motor is planned for the propulsion system, which will provide high sub-sonic speed. At first it is planned that

the shipborne variant of the missile will be developed, equipped with two solid fuel boosters, and used to arm missile patrol boats (each of which can carry eight anti-ship missiles). Later an aerial variant will be developed.

These are the features of the existing and some future naval anti-ship missiles of the main capitalist countries.

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